The taxonomy and ecology of *Solanum* subg. *Leptostemonum* (Dunal) Bitter (Solanaceae) in Queensland and far north-eastern New South Wales, Australia

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Summary

Bean, A.R. (2004), The taxonomy and ecology of *Solanum* subg. *Leptostemonum* (Dunal) Bitter (Solanaceae) in Queensland and far north-eastern New South Wales, Australia. *Austrobaileya* 6(4): 639–816. 90 species (82 indigenous and 8 naturalised) of *Solanum* subg. *Leptostemonum* are recorded for Queensland and far north-eastern New South Wales (north of 29°S latitude), with 50 species endemic. 29 species and one subspecies are described as new and illustrated (*S. ammophilum, S. argopetalum, S. cocosoides, S. crebrispinum, S. ditrichum, S. dryanderense, S. dumicola, S. dysprosium, S. eminens, S. fervens, S. francisii, S. galbinum, S. graniticum, S. hapalum, S. innoxium, S. intonsum, S. johnsonianum, S. jucundum, S. latens, S. longissimum, S. lythrocarpum, S. mentiens, S. parvifolium* subsp. *tropicum, S. pusillum, S. rixosum, S. senticosum, S. stenopterum, S. ultimum, S. versicolor and S. vicinum*); six species are reinstated (*S. angustum* Domin, *S. crassitomentosum* Domin, *S. defensum* F.Muell., *S. magnifolium* F.Muell., *S. mitchellianum* Domin and *S. shirleyanum* Domin) and three are reduced to synonymy (*S. cleistogamum* Symon, *S. dallachii* Benth. and *S. seitheae* Symon). *S. dianthophorum* Dunal is accepted, but known only from the holotype. *S. centrale* and *S. yirrkalense* are newly recorded as native to Queensland, and *S. incanum* is newly recorded as naturalised. Lectotypes are chosen for *S. defensum* and *S. dunalianum*, and a replacement lectotype chosen for *S. sturtianum*. All Australian species are classified into (mostly pre-existing) informal taxonomic groups. Distribution maps and notes on distribution are given for all taxa. Other biogeographical data (based on degrees of latitude and longitude) are provided, both at species and group level. Indumentum characters (particularly those of the stellate hairs) have been used extensively to elucidate the taxonomy of the group. Ecological requirements of various *Solanum* species and the reasons for their infrequent or transient occurrence are discussed. The use of *Solanum* fruits as food is reviewed. Identification keys (dichotomous and multi-access) are provided for all Queensland species. The conservation status of all indigenous taxa is assessed.

Keywords: *Solanum*, *Solanum* subg. *Leptostemonum*, new species, taxonomy, ecology, biogeography, conservation status, Queensland, New South Wales, Australia, keys, DELTA, identification, indumentum, stellate hairs.

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Introduction

Solanum is the fourth largest Angiosperm genus in the Queensland flora. An interrogation of the Queensland Herbarium database in July 2003 returned 73 accepted and formally named indigenous *Solanum* species. Only *Acacia* (305 spp.), *Eucalyptus* (188 spp.), and *Cyperus* (112 spp.), had more species.

Five subgenera of *Solanum* (using the classification of D'Arcy (1972)) are represented in Queensland, either as natives or naturalisations:

S. subg. *Archaesolanum* - the 'Kangaroo Apples', quick growing shrubs without stellate hairs or prickles, leaves often deeply lobed (*S. aviculare, S. vescum*);

S. subg. *Brevantherum* - comprising the 'Wild Tobaccos', large shrubs with stellate hairs and corymbose inflorescences (*S. mauritianum, S. erianthum, S. abutiloides*);

S. subg. *Leptostemonum* - the subject of this paper, and comprising the majority of taxa;

S. subg. *Potatoe* - the 'Potato Creepers', vines with deeply lobed leaves (*S. laxum, S. seaforthianum, S. triflorum*);

S. subg. *Solanum* - comprising the 'Blackberry Nightshades' or 'Black Nightshades', small shrubs with umbel-like inflorescences (*S. americanum, S. chenopodioides, S. nigrum, S. opacum, S. physalifolium, S. villosum*), and two species from *S.* sect. *Geminata* (Knapp

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2002) - *S. spirale*, a tall rainforest shrub with globose or ellipsoidal orange fruits, and the small shrub *S. pseudocapsicum* (Jerusalem Cherry).

Solanum subg. *Leptostemonum* consists of about 500 species distributed throughout the warmer parts of the world, but with centres of diversity in the South American tropics and subtropics, central east Africa, New Guinea and Australia. Distinguishing morphological characters for the subgenus include the attenuate anthers, stellate indumentum, and the presence of prickles (Whalen 1984). They may be briefly described as the "prickly" *Solanum* species. The few species that lack prickles invariably possess stellate indumentum, and the few species that lack stellate indumentum invariably possess prickles.

Significant contributions to the taxonomy and knowledge of Queensland members of the subgenus have been made by Brown (1810), Mueller (1861), Bentham (1868), Domin (1929), Symon (1971, 1981, 1995), Ross (1986) and Bean (2001, 2002b).

A reappraisal of Queensland species is necessary for several reasons. Some previously synonymised species (particularly those described by Karel Domin) deserve to be re-instated; additional taxa have been discovered or recognised; extra information on distribution, morphology or ecology has become available for many species; and some nomenclatural changes are necessary. The inclusion of a small portion of New South Wales (north of 29° S) in this study means that the biogeographic data are more meaningful.

The ensuing discussion relates entirely to the members of *S.* subg. *Leptostemonum* occurring in Queensland and far northeastern New South Wales.

Morphology and terminology

***Habit*:** Habit varies from completely prostrate shrubs to small trees attaining 9 metres in height (*S. viridifolium*). Most are shrubs 0.5–1.5 metres high. Habit is discussed further in the Ecology section below.

***Juvenile plants*:** These are plants that have not yet reached reproductive age, or are bearing their first flowers. Their leaves are called juvenile leaves. The juvenile leaves are generally larger, pricklier and more deeply lobed than those occurring on adult (flowering and fruiting) plants. The stems of juvenile plants of any given species are usually more densely prickly than on adult plants. Juvenile growth may also be found on vigorous shoots arising from the lower parts of sexually mature plants, or the shoots arising from a cut stem. For species exceeding 1 metre in height at maturity, juvenile characters have been assessed, where possible, on plants 20–30 cm high. For smaller species, particularly the herbaceous resprouters, the juvenile stage is either absent or of very short duration, and hence is only rarely described.

***Sympodia*:** Each inflorescence in *Solanum* is developmentally terminal, but is quickly exceeded by subsequent vegetative growth (Child 1979). Each lateral vegetative shoot is termed a sympodial unit. The sympodia are usually difoliate *i.e.* there are two leaves between successive inflorescences. These leaves may arise from the same position on the stem (geminate) or not (disjunct).

***Bark*:** In most species, the bark is unremarkable and rather non-descript. It is smooth, green to dark brown, and often bears raised lenticels. However, in two species (*S. furfuraceum* and *S. sporadotrichum*), the bark is conspicuously furrowed and corky, especially on the large stems. In these species, corky outgrowths are usually visible even on (the thicker stems of) herbarium specimens. Corky stems (less obvious than the above) are also found on *S. versicolor*, *S. francisii* and *S. crassitomentosum*.

***Large stems*:** Those more than 30 cm from the growing point, and including the trunks of small trees.

***Branchlets*:** Stems less than 30 cm from the growing point (*i.e.* those usually present on herbarium specimens). In most species, they appear to the naked eye smooth and terete, but in a few species (notably *S. quadriloculatum*), they are conspicuously ridged.

Adult leaves: Leaves that are found adjacent to, or distal from, the inflorescences. Many

species have entire adult leaves, but in others, the adult leaves are variously lobed. A "lobing index" is used in this paper, which is the length of the lobe halfway along the lamina divided by the parallel length of the adjacent sinus (f/e in **Fig. 1**). The index is 1 for an entire leaf; leaves with an index >2 are considered to be deeply lobed. While the leaf size of a species can vary considerably depending on prevailing environmental conditions, the lobing index is relatively constant. In a few species, leaves can be pseudo-pinnate (derived from deeply lobed leaves where the proximal lobes are divided right to the midrib).

At least some of the adult leaves of all Queensland *Solanum* species are bilaterally asymmetrical, and this is manifested most conspicuously at the lamina base. In this paper, such a leaf base is described as oblique. Obliqueness is given both in absolute terms (the length "b" on **Fig. 1**) and as a percentage of lamina length ($100 \times b/(a+b)$ on **Fig. 1**). Petiole length is measured in absolute terms (the length "c" on Fig. 1) and as a percentage of lamina length ($100 \times c/(a+b)$ on **Fig. 1**). Both are useful for discriminating some taxa. In a few species, the petioles are winged, the wings consisting of a narrow strip of green tissue on either side of the petiole throughout its length.

Inflorescence: *Solanum* inflorescences are ebracteate scorpioid cymes, but often appearing racemose, with a single axis bearing several pedicellate flowers. A few species (*e.g. S. chrysotrichum*) have a much-branched inflorescence, resembling a panicle. In some species, particularly those allied to *S. densevestitum*, the inflorescence comprises a single flower, or sometimes 2–3 flowers all arising from the branchlet without any common peduncle (pseudo-umbellate). The 'racemose' inflorescence may also lack a common peduncle, with the basal flower emerging very close to the branchlet, and subsequent flowers borne on a rachis.

Sex expression: Many species are andromonoecious, that is, their inflorescences comprise some bisexual flowers (towards the base) and some male flowers, where the style is much reduced in length and is non-functional (Whalen 1984). A style can be inferred to be functional when it protrudes beyond the top of the anthers. Another large group of species bear only bisexual flowers. One Queensland species (*S. carduiforme*) is dioecious (Symon 1981).

Flowers: *Solanum* flowers are largely pentamerous, but tetramery (where there are 4 calyx lobes, four corolla lobes and four stamens) is found in several groups or species. For most species, only occasional tetramerous flowers occur, but in some species (*e.g. S. viridifolium*) approximately half of the flowers are tetramerous, while in a few species (*e.g. S. ammophilum*) all flowers appear to be tetramerous.

The calyx comprises a fused basal section or "tube", and free lobes. The calyx tube is somewhat invariate in shape, but the shape of the calyx lobes is often somewhat diagnostic. The calyx invariably grows between anthesis and fruiting, but in many species this growth is minimal and the lobes fail to extend to half the length of the mature fruit (not accrescent). In other species, either the calyx lobes grow until they extend beyond the fruit, or the calyx tube grows to completely envelop the mature fruit (accrescent).

Prickliness of the calyx is correlated with both sex expression and accrescence. In some Queensland species (mostly naturalised species such as *S. linnaeanum*, but also *S. stupefactum*), the calyx of the basal bisexual flowers is much more prickly than that of the distal male flowers. In species with a strongly accrescent calyx, the calyx is always prickly.

The pedicels generally lengthen between anthesis and fruit maturation, and hence measurements are provided for both stages.

Corolla shape, size, and sometimes colour, are useful in identifying *Solanum* species. The shape is dependent on the amount of "interpetalar" tissue present (the tissue connecting the individual lobes of the corolla). Species with little or no interpetalar tissue have deeply lobed corollas; species with abundant interpetalar tissue have rotate or pentagonal corollas. In most Queensland species, the corolla is mauve to purple, but in a few it is white, while one naturalised species (*S. rostratum*) has a yellow corolla. All

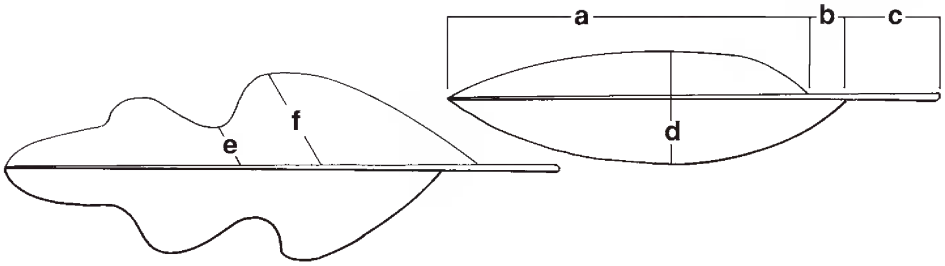

Fig. 1. Diagrammatic representation of leaves showing the measurements used.

Queensland species (except *S. pugiunculiferum*) have stellate hairs on the outer surface of the corolla, but relatively few have hairs on the inner surface, and hence this character is useful.

Each stamen comprises a short filament and a relatively long, attenuate, yellow anther. The anthers are very similar throughout the subgenus, although anther length can be diagnostic. The style is most often erect, emerging between the stamens, but some species have a sigmoid or eccentric style that is strongly bent just above the ovary, so that it does not touch the anthers at all. The stigma is for most species unremarkable, being entire or obscurely lobed. However, in a few species belonging to the *S. dioicum* group, the stigma is conspicuously forked, with each fork up to 5 mm long. The ovary is a rather uniform structure, but the indumentum pattern on the surface is very useful.

***Fruits and seeds*:** Mature fruits are very valuable for species identification and classification (Nee 1986; Symon 1987). Each species has a characteristic fruit size, shape, colour, exocarp thickness and placentation pattern, and related species usually have similar fruit characteristics. Unfortunately, dried fruits preserved on herbarium specimens are totally unsuitable for determining most of the characters mentioned, even colour. Collectors rarely mention fruit colour, and when they do, there is no guarantee that the fruits they observed were mature. Hence fresh fruits or fruits preserved in alcohol and good collector's notes are essential for the accurate assessment of fruiting characters. Such collections are very infrequent, and much is still to be learned.

Fruit maturity is indicated in the field either by a distinct colour change (usually from green to red), or by their becoming relatively soft and easily detached from the plant.

About 21 of the Queensland species (belonging to Groups 5, 9A & 13) have bright red succulent fruits with a thin exocarp, *e.g. S. stelligerum*. The three species of Group 13A similarly have succulent fruits with a thin exocarp, but are black in colour. All these species have inflorescences in which usually all flowers are bisexual. Many other species (of Groups 22–28) have fruits with a thicker exocarp that remain pale green (often with some darker green variegation) at maturity, or sometimes becoming greenish-white or pale yellow. This fruit type is correlated with a weakly or strongly andromonoecious inflorescence. A small number of species have fruits which do not fit either of these types *e.g. S. vicinum* has a large deep-purple fruit about the size of a plum; *S. stupefactum* has a bright-orange hairy fruit.

Fruit shape is globular for most species, but distinctly oblate for *S. echinatum*, and distinctly ellipsoidal for *S. innoxium* and *S. gympiense*.

Placentation is a character that varies widely between species (Nee 1986). The "standard" placentation pattern for Solanaceae is a 2-locular fruit with axile placentas, but many Queensland taxa have 1-locular fruits, and a few have 3- or 4-locular fruits. The degree of development of the placenta also varies greatly.

Seed morphology is rather similar throughout, and all species have seeds that are

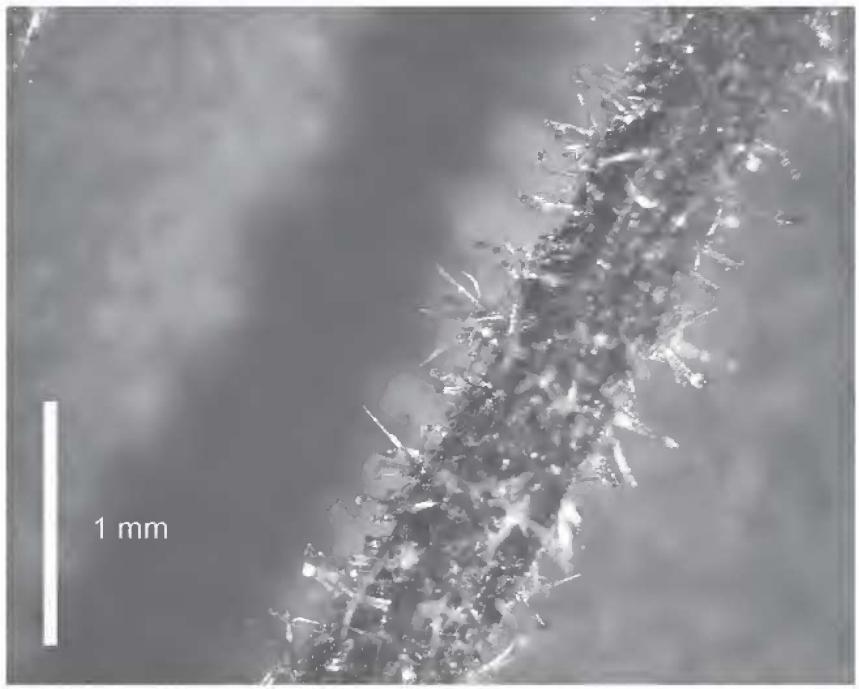

Fig. 2. Pedicel of ***S. torvum***, showing mixture of gland-tipped finger hairs and stellate hairs (Wilson GWW123)

lenticular and orbicular to somewhat reniform in outline. Differences in colour are useful in discriminating some species. Most species have pale (white to pale yellow) seeds, but a few species have quite dark seeds (brown to black).

***Trichomes*:** Trichome morphology is extremely useful in *Solanum* taxonomy (Roe 1971; Seithe 1979; Whalen *et al.* 1981; Seithe & Sullivan 1990), but has been only superficially utilised by taxonomists dealing with Australian species.

Comprehensive trichome descriptions are provided in this paper, as trichomes have proven to be consistent in form and size for each plant part for each species, and hence exceedingly useful for distinguishing taxa.

There is often a bewildering array of trichome constructions present on a single species. For example, the pattern observed on the branchlets is usually different from that observed on the upper leaf surface, and that pattern is different from that of the lower leaf surface etc. Hence, for the comparisons to be useful, indumentum must be described separately for each plant part. In this paper, five plant parts have been chosen for which indumentum is described in detail: branchlets, leaf upper surface, leaf lower surface, pedicel/calyx, and ovary/style.

Some trichome terminology follows Roe (1971). The trichome types used here are adapted from Seithe (1979), who recognised several kinds of trichomes, belonging to two distinct classes. **Type 1 hairs** include Finger hairs and all forms of Stellate hairs, while **Type 2 hairs** are very short gland-tipped trichomes, relatively uniform in appearance (see below).

1. Finger hairs (Seithe 1979; Seithe & Anderson 1982) - uniseriate unbranched hairs consisting of more than one cell, and usually 0.5–5 mm long. This hair type is found on several Queensland species (**Fig. 2, 3**).

Seithe (1979) has shown that they are ontologically related to stellate hairs, and that the latter are derived from finger hairs. In a few Queensland species, the developmental process can be observed directly *e.g.* finger hairs with tiny protuberances near the base; or stellate hairs with very short lateral rays and very long

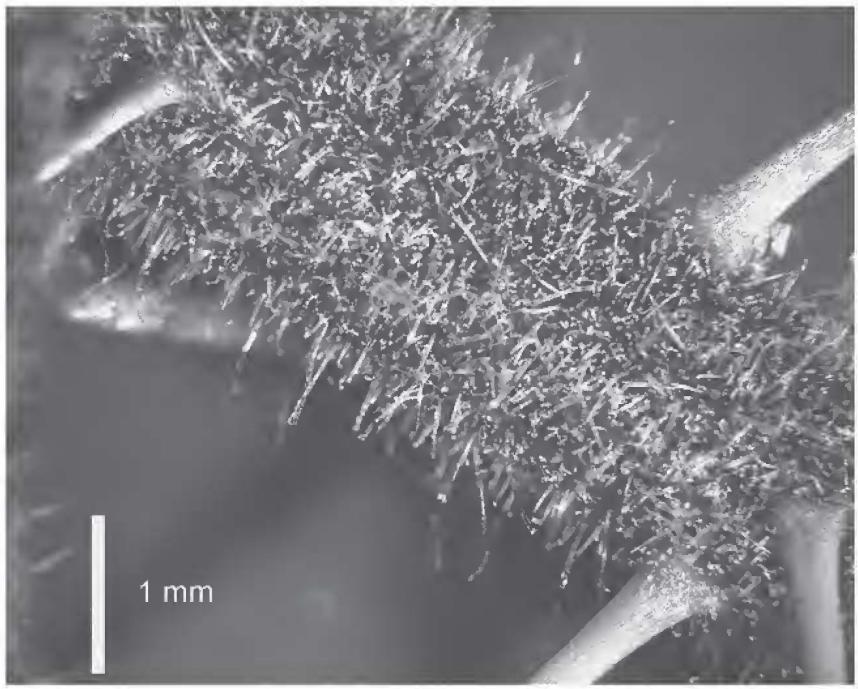

Fig. 3. Branchlet of ***S. ditrichum***, showing abundant finger hairs (Forster 11564 & Leiper)

central ray. In other species, finger hairs may be present as 'protostellae' (see below). However in most cases, the finger and stellate hair types are readily distinguishable. The finger hairs may have a unicellular glandular tip.

2. Stellate hairs (Roe 1971; Seithe 1979) - made up of a multiseriate stalk (sometimes obscure or absent) bearing varying numbers of unicellular, acicular lateral rays and (usually) with an erect uniseriate central ray or midpoint (Whalen 1984) (**Fig. 2, 4–10**).

Stellate hairs are a feature of nearly all species in the subgenus (and the subgenus comprises the majority of *Solanum* species in Australia). The morphological characteristics of stellate hairs (size, form, colour, density, number of lateral rays, and relative length of central ray) are all very useful for taxonomic purposes, in that the indumentum pattern for each plant part within a species has proven to be remarkably consistent.

(a) Developmental forms of stellate hairs

In many species, all hairs growing adjacent to each other are more or less the same size and shape. In other species, it appears that the development of the stellate indumentum of the leaves (and probably other organs) "switches off" before all the hairs have reached optimum development, resulting in stellae of differing sizes and developments being found in close proximity. In this paper, stellate hairs that have not reached their optimum development are termed "protostellae". These protostellae are smaller in size than ordinary stellae, and have fewer lateral rays, and they are interspersed with the ordinary stellae (**Fig 5, 10**). Protostellae are usually mentioned only for the upper leaf surface, though they may be present on other parts of the plant.

(b) Diameter

The average width of the stellate hair projected at right angles to the subtending surface.

The absolute distance between stellae is measured from centre to centre.

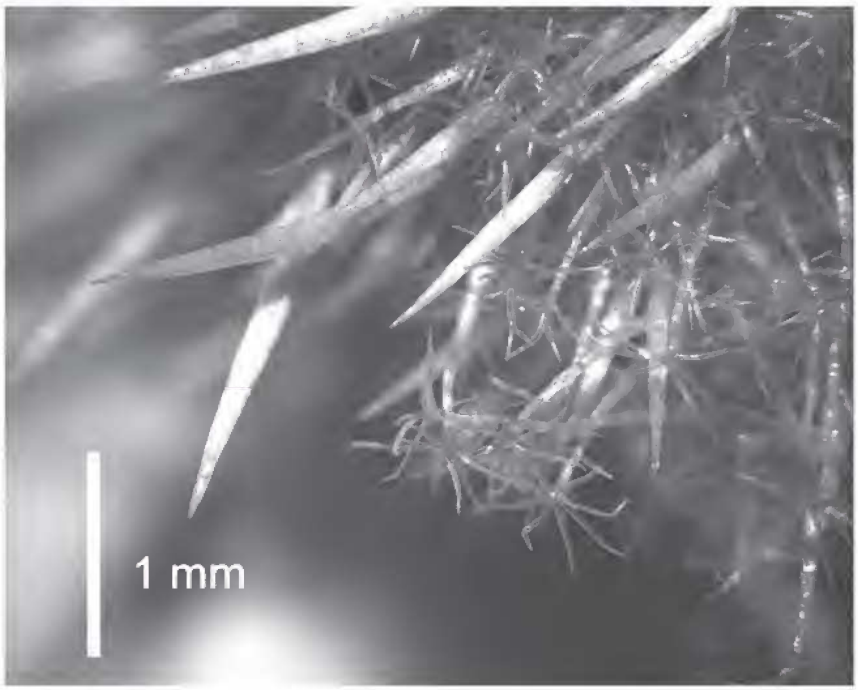

Fig. 4. Calyx of ***S. longissimum***, showing developing prickles with complete stellate hair at the apex (Bean 5617 & Forster)

(c) Density

Leaf indumentum density is measured on fully expanded adult leaves. In the species descriptions, the following terminology is used for stellate hair density:

very dense - ordinary stellae overlapping, multi-layered, the subtending surface not visible with hand lens (**Fig. 8**);

dense - ordinary stellae overlapping, 0.1–0.5 diameter apart (centre to centre), 1 or 2 layers only, the subtending surface visible with hand lens;

moderate - ordinary stellae just overlapping, 0.5–1 diameter apart (centre to centre) (**Fig. 7**);

sparse - ordinary stellae 1–2 diameters apart (centre to centre) (**Fig. 5**);

very sparse - ordinary stellae > 2 diameters apart (centre to centre) (**Fig. 10**).

Hence for "very dense", "dense" and "moderate", the stellae are overlapping; for "sparse" and "very sparse", they do not touch each other.

Stellate hair density is certainly quite variable for a species. Observations in the field and herbarium show that relatively large leaves that have developed under mesic conditions tend to have more widely spaced hairs than on small leaves developed under xeric conditions. It is hypothesised that the number of stellate hairs per leaf is fixed for each genotype, and that density is determined by environmental conditions.

(d) Orientation of lateral rays

If the lateral rays of the stellate hair are all in one plane, like the spokes of a wheel, they are described as "porrect" (Roe 1971) (**Fig. 4, 6–10**). Sometimes the lateral rays are all placed at 30–60 degrees from the central ray. In this case, the lateral rays (usually 8 or fewer) are described here as "ascending" (**Fig. 5**). If the lateral rays (usually 8–16) are placed at various angles with respect to the central ray, the hair is described as "multiradiate" (Roe 1971).

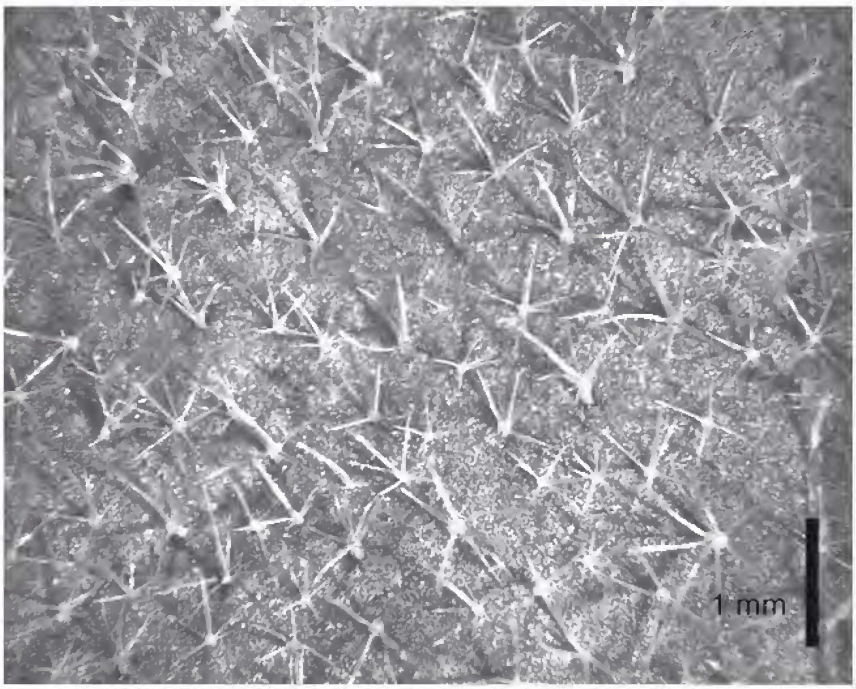

Fig. 5. Stellate hair pattern on the upper leaf surface of ***S. furfuraceum***, showing ascending lateral rays (Bean 15928)

(e) Central ray

The ratio of the central ray length compared to the average lateral ray length is reported. In some species, the central ray of the stellate hair possesses a unicellular glandular tip (Seithe 1979) (**Fig. 3**).

(f) Stalk length

Often, stellate hairs are sessile, *i.e.* there is no stalk below the lateral rays. In all other cases, the stalk length is reported.

Summary of stellate hair patterns observed in Queensland species

***a) Relative diameter*:** In general, stellae from the upper leaf surface have a smaller diameter than elsewhere on the plant. Those from the lower leaf surface, branchlets, calyx and style are usually about the same size.

***b) Absolute diameter*:** The broadest stellae are possessed by *S. densevestitum* (up to 1.8 mm across). Other species with very broad stellae are *S. crebrispinum, S. quadriloculatum, S. stenopterum, S. chippendalei* and *S. stupefactum*. Species with the smallest stellae include *S. corifolium, S. mentiens, S. francisii, S. macoorai, S. elachophyllum* and *S. sturtianum*, whose stellae are frequently less than 0.2 mm across.

***c) Lateral rays*:** Many species have 8, 7 or 8, or 6–8 lateral rays on each stellate hair. Some species have many more lateral rays. *S. elaeagnifolium* branchlet stellae have 15–18 lateral rays. Other species with 13 or more lateral rays are *S. ammophilum, S. cinereum, S. dianthophorum, S. dryanderense, S. elachophyllum, S. oligacanthum, S. sturtianum* (**Fig. 8**) and *S. yirrkalense*. Species with very few lateral rays include *S. cookii, S. coracinum, S. densevestitum, S. dumicola, S. francisii, S. latens, S. pusillum* and *S. rostratum*.

Fig. 6. Upper leaf surface of ***S. pusillum***, showing stellate hairs and Type 2 hairs (Bean 2604)

***d) Central ray*:** Five species have branchlet stellae lacking a central ray*: S. corifolium, S. dimorphispinum, S. lacunarium, S. mentiens* and *S. sturtianum.*

In most species, the central ray is about equal in length to the lateral rays or a little longer.

Several species have branchlet stellae where the central ray is very short (< 0.5 times the length of the lateral rays); *S. amblymerum, S. ammophilum, S. chrysotrichum, S. defensum, S. elachophyllum, S. elaeagnifolium, S. inaequilaterum, S. limitare, S. macoorai, S. torvum.*

At the other extreme are species where the central ray is 5–10 times the length of the laterals, giving the indumentum a shaggy or velvety appearance. These include *S. cookii, S. densevestitum, S. fervens, S. hapalum, S. innoxium, S. johnsonianum, S. lasiocarpum, S. magnifolium, S. serpens, S. stelligerum.*

The variation in the central ray ratio shows no consistent pattern within a species. In other words, the ratio on the branchlets may differ somewhat from the ratio of the lower leaf or the calyx, but it is not consistently longer or shorter on any of these plant parts. While the ratio is usually about the same within a species, a few species have widely different ratios on different plant parts *e.g. S. torvum* 0.1–0.3 *vs.* 0.8–2; *S. latens* 0.5–1 *vs.* 1.5–3; *S. lasiocarpum* 0.8–1.5 *vs.* 4–10; *S. gympiense* 1–2 *vs.* 2–4; *S. ditrichum* 0.7–1.5 *vs.* 2–3.

Type 2 hairs are very short trichomes (<0.1 mm long) occurring in Solanaceae, normally with one stalk cell, and a transparent multicellular glandular head (Seithe & Sullivan 1990). They have also been called 'capitate-glandular trichomes' (Whalen *et al.* 1981), 'multicellular glands' (Seithe 1979; Seithe & Anderson 1982) or 'stipitate glands' (Merrill & Perry 1949; Bean 2001). They are present, though often inconspicuous, on many species, particularly on the ovary and vegetative

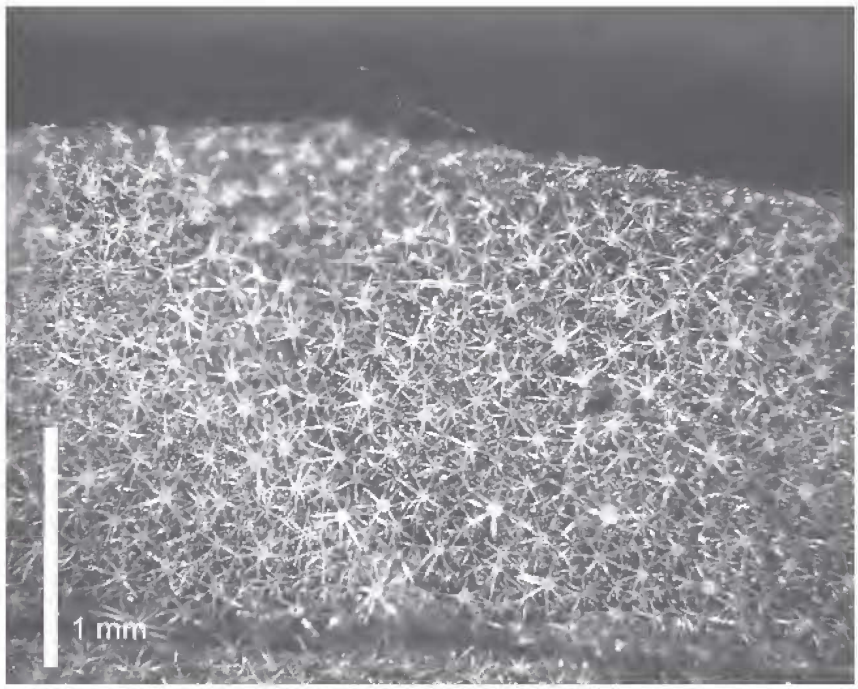

Fig. 7. Stellate hair pattern on the upper leaf surface of ***S. galbinum*** (Thomas 1817 & Thompson)

growing points (**Fig. 6**). Seithe (1979) has shown that they are not developmentally related to Type 1 hairs.

A variant of the Type 2 hair has been observed on the ovary of *S. ammophilum*. These hairs are about 0.1 mm long, have a relatively short stalk and a long ellipsoidal gland, distinctly opaque and white in colour. The glandular portion obviously secretes a great deal of mucilage, as the fruits and the inner surface of the calyx in *S. ammophilum* are quite sticky. Apart from this variant, Type 2 hairs seem quite uniform in morphology, though this may be merely a function of the difficulty in observing such a small structure.

Prickles in *Solanum* are rigid, shiny, sharply pointed structures. They are a feature of almost all species of the subgenus, and may be found on the large stems, branchlets, petioles, laminae, peduncles, pedicels, calyx, and (rarely) the corolla. Their size, shape, distribution and relative abundance is often diagnostic for a species. They are straight, acicular and spreading in the vast majority of Australian native species, but in many naturalised species, they are broad-based and often recurved. Acicular prickles are defined (for the purposes of this paper) as those that are more than 7 times longer than wide.

The fact that the prickles are derived from the lignified stalks of stellate hairs becomes obvious in a few species (*e.g. S. longissimum*), where uniseriate lateral rays are mounted near the apex of the prickles (**Fig. 4**).

Branchlet prickle density (number of prickles per decimetre (dm)) has been assessed on adult branchlets, 1–2 decimetres from the growing point.

Sometimes prickles bear indumentum *i.e.* scattered complete stellate hairs or Type 2 hairs laterally attached to the lower half of the prickle, and this can be diagnostic.

In most species, prickles can be found on the leaf lamina. Usually there are more prickles present on the upper surface, or roughly equal numbers on both surfaces. The few exceptional species (where prickles are more numerous on the lower surface) are *S. capsicoides*, *S. chrysotrichum*, *S. papaverifolium*, *S. semiarmatum* and *S. torvum*.

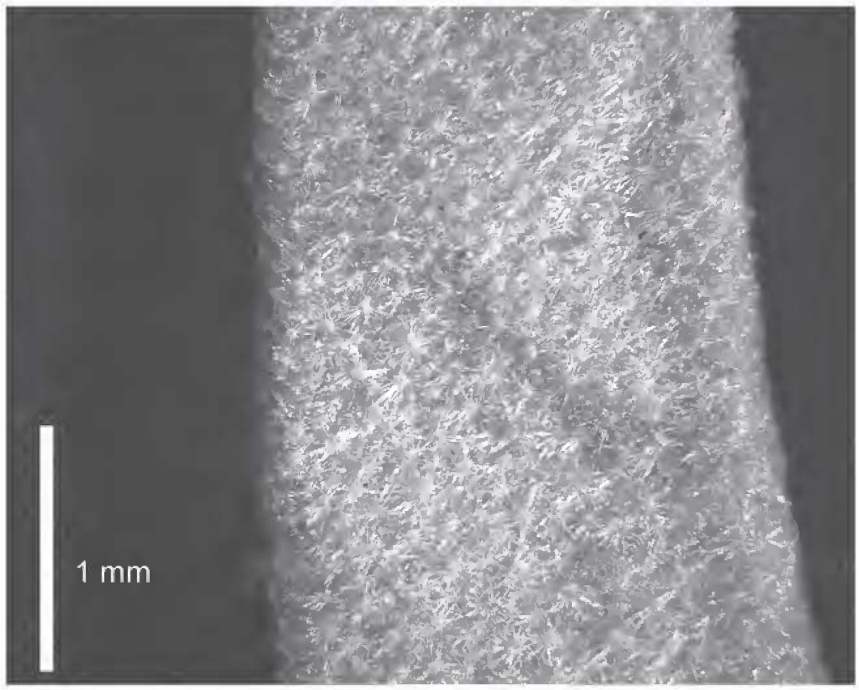

Fig. 8. Lower leaf surface of ***S. sturtianum***; stellae sessile, without a central ray, and with 13–16 lateral rays (Anderson 5070)

Materials and methods

Herbarium specimens have been borrowed from AD, BH, BM, CANB, DNA, K, MEL, NSW, PERTH, PR, and QRS.

Most measurements have been made from dried herbarium material, but material preserved in alcohol has been used for measurements on the flowers and particularly the fruits. Where preserved material was not available, flowers were rehydrated in boiling water, but dried fruits could not be reconstituted, and hence measurements of the exocarp and placenta were not attempted. Leaf dimensions have been derived from the larger leaves present on each specimen. Branchlet indumentum has been assessed from non-abraded stems 10–20 cm from the growing point of flowering or fruiting herbarium specimens.

Whenever possible, the author has examined species in the field, for the purpose of learning about the habitat, ecology, flower and fruit colour, flower sex ratio, and to collect spirit material for later study.

Comprehensive morphological descriptions of all native and currently naturalised species are provided, derived from a DELTA (DEscriptive Language for TAxonomy) (Dallwitz, Paine & Zurcher 1993) dataset of 91 taxa and 153 characters. Data were entered using the DELTA Editor (Dallwitz, Paine & Zurcher 1999), and interactive keys have been produced using Intkey (Dallwitz, Paine & Zurcher 1995; Dallwitz, Paine & Zurcher 2000).

Specimen citations have been arranged according to the Queensland Pastoral districts, and then chronologically under each district. Species doubtfully or formerly naturalised in Queensland are treated briefly at the end of this paper.

Ecology of Solanum subg. Leptostemonum

There is very little literature relating to the ecology of Australian species of *Solanum* subg. *Leptostemonum*. Floyd (1966) studied an area of eucalypt forest near Coffs Harbour in New South Wales. He recorded the species which

Fig. 9. Petiole of ***S. echinatum***, showing a long-stalked stellate hair (Alcock 11285)

germinated in a glasshouse from soil samples taken at an unburnt site, and compared the species with those recorded in the field (at the soil sampling site) two months after a fire. He found that four *Solanum* spp. were common at the burnt field site, but that "[seeds] were virtually absent from the soil before the fire". He attributed this difference to bird dispersal of seeds following the fire. However, the methodology does not indicate that the soil from the unburnt site was closely examined to discover what types of seeds were present, so the author may have only presumed that the soil held no *Solanum* seeds. Bird dispersal of so many seeds in such a short period, onto a bare and burnt site seems very unlikely. A more likely scenario is that the seeds were *already* in the soil (gradually dispersed over the years), and that fire broke the dormancy of the seeds.

In the absence of other published data, I offer the following observations and comments on the Queensland members in the hope that they will stimulate formal study. These observations stem from a desire to understand why many species are so reclusive and transitory.

1. Life Form

Various life-forms have been observed for Queensland species:

(a) herbaceous resprouters - where the above-ground portion dies each year, but the root or rhizome is persistent *e.g. S. adenophorum, S. angustum, S. limitare, S. multiglochidiatum, S. papaverifolium, S. stenopterum, S. versicolor*. These species are leafy for only 3–6 months a year. This term is synonymous with the often-used 'herbaceous perennial'. It would seem that no Queensland species is truly annual in habit.

(b) perennials - where the above-ground part of the plant lives for several years, normally not perishing after the first flowering and fruiting. Perennials can be subdivided into two sub-types:

(i) stoloniferous perennials (only three species; *S. acanthodapis*, *S. serpens* and *S. mentiens*), ground-hugging trailing shrubs that root frequently at the nodes.

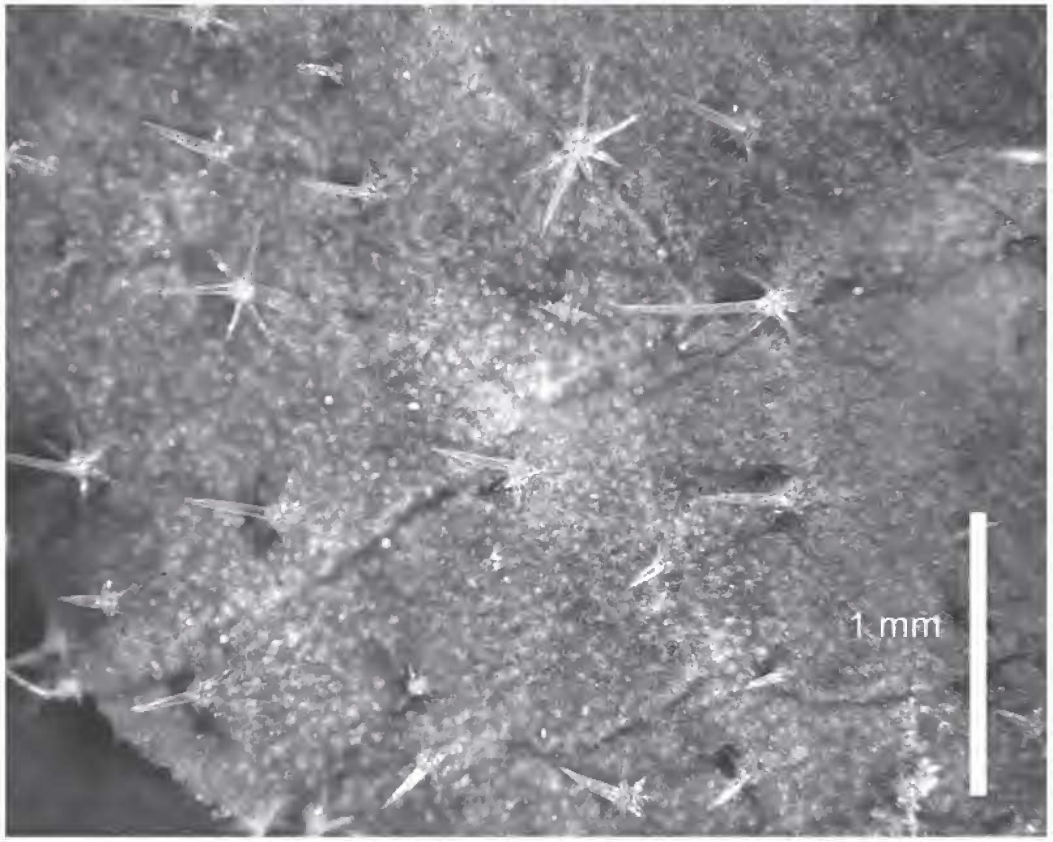

Fig. 10. Upper leaf surface of ***S. linnaeanum***, showing stellae at various developmental stages (Forster 28894)

(ii) rhizomatous perennials (very common type), which form clusters of seemingly separate individuals. These colonies are clonal, being connected by an extensive system of horizontal roots just below the soil surface, and may extend in size from one to hundreds of square metres. Species in this category include *S. corifolium, S. densevestitum, S. ellipticum, S. ferocissimum, S. stelligerum,* and *S. stupefactum*. In some larger and longer-lived species occurring in mesic environments *e.g. S. francisii, S. inaequilaterum, S. nobile, S. semiarmatum,* and *S. viridifolium,* regeneration may be largely from seed.

2. Major habitats

(a) evergreen notophyll rainforest (with no eucalypt forest nearby). These species exploit canopy gaps, where there is enough light to allow flower and fruit development. Fire is absent.

S. acanthodapis, S. cookii, S. corifolium, S. dimorphispinum, S. dryanderense, S. eminens, S. francisii, S. hamulosum, S. inaequilaterum, S. lasiocarpum, S. macoorai, S. mentiens, S. nobile, S. rixosum, S. semiarmatum, S. serpens, S. sporadotrichum, S. vicinum, S. viridifolium.

(b) margins of evergreen notophyll rainforest, or eucalypt forest with rainforest understorey (often described as "wet sclerophyll") on basaltic or other fine-grained soils. Fire occurs infrequently.

S. cookii, S. densevestitum, S. dimorphispinum, S. ditrichum, S. eminens, S. hapalum, S. intonsum, S. latens, S. limitare, S. macoorai, S. magnifolium, S. nobile, S. parvifolium subsp. tropicum,

S. rixosum, S. semiarmatum, S. shirleyanum, S. sporadotrichum, S. stelligerum, S. stupefactum, S. tetrathecum, S. vicinum, S. viridifolium.

(c) semi-evergreen vine thicket or brigalow (*Acacia harpophylla*) or Belah (*Casuarina cristata*) dominated communities on cracking clays. Fire is normally absent.

S. adenophorum, S. coracinum, S. dissectum, S. dumicola, S. elachophyllum, S. ellipticum, S. esuriale, S. furfuraceum, S. johnsonianum, S. latens, S. mitchellianum, S. multiglochidiatum, S. parvifolium subsp. *parvifolium, S. sporadotrichum, S. stenopterum, S. tetrathecum.*

(d) semi-deciduous vine forest on quaternary sand deposits, laterite or granite hills (Cape York Peninsula). Fire is normally absent.

S. defensum, S. discolor, S. dunalianum, S. dysprosium, S. fervens, S. yirrkalense.

(e) shrubby eucalypt woodland, remote from rainforest or vine thicket. Fire occurs frequently.

S. amblymerum, S. angustum, S. carduiforme, S. chippendalei, S. cinereum, S. coracinum, S. crassitomentosum, S. crebrispinum, S. echinatum, S. ellipticum, S. ferocissimum, S. furfuraceum, S. galbinum, S. graniticum, S. gympiense, S. intonsum, S. jucundum, S. limitare, S. longissimum, S. mitchellianum, S. multiglochidiatum, S. nemophilum, S. parvifolium subsp. *parvifolium, S. quadriloculatum, S. senticosum, S. stelligerum, S. tetrathecum, S. ultimum.*

(f) lancewood communities (dominated by *Acacia catenulata, A. shirleyi, A. burrowii, A. sparsiflora* or *A. blakei*) on lateritised Cainozoic duricrusts associated with low mesas or scarps. Soil may be red earth, brown loam, or skeletal on plateau margins. Fire occurs infrequently.

S. argopetalum, S. cocosoides, S. ellipticum, S. galbinum, S. innoxium, S. jucundum, S. latens, S. lythrocarpum, S. pusillum, S. ultimum.

(g) red earths in mulga (*Acacia aneura*) dominated communities.

S. centrale, S. ellipticum, S. ferocissimum, S. quadriloculatum, S. sturtianum, S. versicolor.

(h) grassland or open woodland on heavy cracking clays.

S. esuriale, S. lacunarium, S. papaverifolium, S. stenopterum.

(i) shrublands in arid zone.

S. ammophilum, S. chenopodinum, S. oligacanthum, S. sturtianum.

(j) saline littoral zone.

S. pugiunculiferum.

(k) degraded land (where frequent and/or gross disturbance has allowed exotic species to partially or completely replace the native flora).

S. capsicoides, S. chrysotrichum, S. elaeagnifolium, S. incanum, S. linnaeanum, S. rostratum, S. sisymbriifolium, S. torvum.

Species from the arid and semi-arid zones frequently occur underneath trees, which may reflect the preferential deposition of seeds by birds, or some requirement for protection from the sun during the middle of the day, or relief from grass competition.

No species occurs in heathlands, mangroves or swamps.

3. Likelihood

The likelihood of encountering species of *Solanum* subg. *Leptostemonum* increases as you move from:

- low-nutrient soil to high-nutrient soil
- woodland to closed forest/rainforest
- low altitude to high altitude
- poorly drained sites to well drained sites
- frosty areas to frost-free areas

In other words, there are few (or no) species in woodland with sandy soil at low altitude, and (potentially) numerous species on basaltic soil in rainforest at high altitude.

4. Response to disturbance

Most (perhaps all?) species can be classified as pioneer species. They are promoted by disturbance events, which may be grouped into three main types:

a) *Fire*: No species has a lignotuber, hence above ground parts are killed by moderate intensity fires, but on the other hand, most species are rhizomatous. Fire encourages seed germination, promotes regeneration from rhizomes and removes competition for light and nutrients. Absence of fire for a long period may see the decline or local extinction of *Solanum* spp.

b) *Cyclone*: For those species that grow in dense rainforest environments, they must rely on severe storms and cyclones (in the absence of land-clearing activities) to open the tree canopy and allow sufficient light for them to grow and reproduce, and thereby maintain the soil seedbank.

c) *Mechanical*: Mechanical disturbance of the soil can have the same effect as fire *i.e.* promoting the seed germination and/or regeneration from rhizomes. This type of disturbance is usually man-induced *e.g.* roadworks, quarries, logging etc.

In suitable recently disturbed sites, solanums may occur in large numbers. The numbers then gradually dwindle until, after a few years, none is left. Hence, *Solanum* spp. (perennials as well as herbaceous resprouters) often cannot be relocated at (uncleared) sites where they were recorded only a few years before.

Native *Solanum* species do not fare very well in company with other shrubs, forbs or graminoids. They are easily out-competed by a dense sward of grass or by clumps of shrubs. They are not favoured by frequent disturbance *e.g.* soil tilling, as there is insufficient time for seed production or re-establishment of rhizome networks.

In summary, indigenous species in *Solanum* subg. *Leptostemonum* are favoured by infrequent major disturbance (cyclonic, mechanical or fire), provided that such disturbance does not stimulate the proliferation of exotic weeds.

Conservation Status

In general, native *Solanum* species appear to be in decline. Some species from rainforest-margins eg. *S. ditrichum*, *S. rixosum*, can no longer be found in many districts where they were recorded in the early 1900's. Rainforest margins are the preferred habitat of the pernicious weed *Lantana camara*. It seems clear that this exotic shrub has caused serious decline in the populations of many *Solanum* species treated in this paper.

The Brigalow communities of central Queensland have been so reduced by land clearance, that some species, *e.g. S. dissectum*, *S. adenophorum*, and *S. johnsonianum,* are now endangered or critically endangered. Remaining populations are threatened by aggressive weeds such as *Panicum maximum, Parthenium hysterophorus,* and deliberately introduced pasture grasses, especially *Cenchrus ciliaris*.

All species have been assessed against the IUCN Red List categories and criteria (IUCN. 2001). With regard to 'mature individuals', I have followed the IUCN recommendation that "reproducing units within a clone should be counted as individuals, except where such units are unable to survive alone (*e.g.* corals)", and that where population size fluctuates, "use a lower estimate".

Both of these recommendations have implications for the *Solanum* assessments. In *Solanum* subg. *Leptostemonum*, clones are the rule rather than the exception, and fluctuations in population size occur in most (if not all) species. However, I have not interpreted these fluctuations as "extreme", as this would have invoked Criteria B1c(iv) and/or B2c(iv) and C2b. This would result in many 'stable' taxa (having no apparent threat) being recognised as threatened. Species assessments have been done on an Australia-wide basis. Overseas occurrences have not been considered.

For some species, a herbarium collection during the last 10–15 years has been accepted as a current location, even though experience

has shown that solanums can only rarely be found at old collection sites. Sometimes the species may still be present (as seed or rhizomes) and sometimes it has disappeared altogether.

Of the 82 indigenous taxa treated in this paper, 2 have been assessed as "Critically Endangered", 8 as "Endangered" and 14 as "Vulnerable".

Solanum as food

Solanum fruits were an important source of food for Australian Aborigines, particularly in the arid areas. Their importance in the arid zone was due to a number of factors - they are readily available and collectable and visibly obvious; they can be stored for later use, and most species can be eaten without preparation (Peterson 1979).

Several species were used consistently by aborigines in arid Australia. *Solanum centrale* may be eaten when ripe or ground into a paste and moulded into balls which keep indefinitely. *S. chippendalei* is edible, but only after removal of the bitter seeds and placenta. They may then be eaten fresh, or dried-out and stored on skewers. Dried fruits can be reconstituted in water before consumption. *S. ellipticum* is reported to be an important species which can be eaten fresh. *S. esuriale* can also be eaten fresh, or stored as above (Peterson 1979, Latz 1995).

Other arid zone species are strongly poisonous, *e.g. S. quadriloculatum* (Everist 1974, Latz 1995), and were avoided by all aboriginal groups. Other species given by Everist (*loc. cit.*) as definitely poisonous, at least to livestock, are *S. elaeagnifolium*, *S. linnaeanum* and *S. sturtianum*. Several other species were suspected to be poisonous.

Solanum appears to have been of much less importance as a food in coastal areas, because of their lesser frequency and the many other food sources available in these areas. However, *S. stelligerum* fruits were reported by Lampert & Saunders (1973) to be edible. *S. hapalum* fruits likewise are edible (R. Fensham pers. comm.).

Cytology

Randell & Symon (1976) undertook extensive chromosome counts of Australian *Solanum* spp. They found that n = 12 or 24 for all members of S. subg. *Leptostemonum*. No other numbers have been reported.

Hybrids

Naturally occurring hybrids appear to be rare in *Solanum* subg. *Leptostemonum*, at least in Australia. Symon (1981) made no mention of hybridisation. I have personally seen only one instance of a presumed interspecific hybrid in the field. In an area where *Solanum latens* and *S. nemophilum* were both common, there was a small colony of plants displaying traits intermediate between these two species, *viz.* leaf size, indumentum density, stem prickliness, and stellate hair size (voucher material at BRI; AQ 772057).

Classification

With about 500 species world-wide, *Solanum* subg. *Leptostemonum* has a diverse membership, and classifying them has and will present difficulties. The conspectus by Whalen (1984) has provided an excellent framework for the whole subgenus, and a basis for future work. He presented 33 informal taxonomic groups for the subgenus, arranged in systematic order. By his own admission, his knowledge of the Old World taxa was limited, and so it is perhaps not surprising that I have made many amendments to his classification for taxa occurring in Queensland. This has entailed the shifting of many species to a more appropriate group, and the creation of new groups where Whalen broadly circumscribed them (especially the *S. ellipticum* group). The native Australian species are here classified into 15 informal groups, compared to the 8 groups recognised by Whalen (*loc. cit.*), but the average Australian group size is only now comparable to the average group size for New World taxa in Whalen (*loc. cit.*).

I have retained Whalen's group numbers except for Group 6 (*S. macoorai* group), where the "type" species was obviously misplaced. New groups have been slotted in with the addition of letters *e.g.* 13A. These are not intended to represent "subgroups", but rather are equal in rank to Whalen's established groups.

Informal taxonomic groups for Australian *Solanum* subg. *Leptostemonum*, adapted from Whalen (1984).

Notes: All accepted Australian species are listed. Queensland and north-eastern N.S.W. taxa are listed in roman script; non-Queensland taxa are given in italics. Naturalised species are denoted by an asterisk.

Group 5	S. dunalianum group; S. dunalianum, *S. tetrandrum,* S. viridifolium.
Group 9A	S. densevestitum group; S. densevestitum, S. gympiense, S. hapalum, S. innoxium, S. johnsonianum, S. nemophilum, S. ultimum.
Group 13	S. ferocissimum group; S. chenopodinum, S. corifolium, S. defensum, S. discolor, S. dissectum, S. dryanderense, S. dysprosium, S. ferocissimum, S. fervens, S. inaequilaterum, S. latens, S. lythrocarpum, S. mentiens, S. parvifolium, S. shirleyanum, S. stelligerum, S. yirrkalense.
Group 13A	S. semiarmatum group; S. coracinum, S. mitchellianum, S. semiarmatum.
Group 14	S. torvum group; S. chrysotrichum*, S. torvum*.
Group 22	S. quitoense group; S. lasiocarpum.
Group 23	S. mammosum group; S. capsicoides*.
Group 25	S. hystrix group; S. adenophorum, *S. campanulatum,* S. cookii, S. ditrichum, *S. eardleyae, S. eremophilum,* S. graniticum, *S. hoplopetalum, S. hystrix,* S. lacunarium, S. multiglochidiatum, *S. oligandrum,* S. papaverifolium, *S. petrophilum, S. prinophyllum, S. pungetium,* S. pusillum, S. stenopterum, S. vicinum.
Group 25A	S. pugiunculiferum group; S. pugiunculiferum
Group 27	S. ellipticum group; S. angustum, S. argopetalum, S. crebrispinum, S. crassitomentosum, S. dianthophorum, S. ellipticum, *S. horridum,* S. quadriloculatum, S. senticosum, *S. terraneum.*
Group 27A	S. hamulosum group; S. dimorphispinum, S. eminens, S. hamulosum.
Group 27B	S. macoorai group; S. acanthodapis, S. amblymerum, *S. armourense, S. brownii, S. celatum,* S. centrale, S. cinereum, S. cocosoides, *S. curvicuspe,* S. dumicola, S. francisii, S. furfuraceum, S. galbinum, S. intonsum, S. jucundum, S. limitare, S. macoorai, S. magnifolium, *S. neoanglicum,* S. nobile, S. rixosum, S. serpens, *S. silvestre,* S. sporadotrichum, S. tetrathecum.
Group 27C	S. esuriale group; ammophilum, *S. coactiliferum,* S. elachophyllum, S. elaeagnifolium*, S. esuriale, *S. hesperium, S. karsense, S. nummularium, S. oldfieldii,* S. oligacanthum, *S. orbiculatum, S. plicatile,* S. sturtianum, S. versicolor.
Group 27D	S. lasiophyllum group; *S. ashbyae, S. gabrielae, S. gilesii, S. lachnophyllum, S. lasiophyllum.*
Group 27E	S. echinatum group; S. echinatum, S. longissimum, *S. lucani.*
Group 28	S. dioicum group; *S. asymmetriphyllum, S. beaugleholei,* S. carduiforme, *S. cataphractum,* S. chippendalei, *S. clarkiae, S. cunninghamii, S. dioicum, S. diversiflorum, S. eburneum, S. heteropodium, S. leopoldense, S. melanospermum, S. oedipus, S. petraeum, S. phlomoides, S. tudununggae, S. vansittartense.*
Group 29	S. incanum group; S. incanum*, S. linnaeanum*, *S. marginatum**, S. stupefactum.
Group 33	S. rostratum group; S. rostratum*.
Ungrouped	S. sisymbriifolium*

Biogeography

With 82 indigenous species, 50 of these endemic, Queensland and north-eastern New South Wales is the centre of diversity for *Solanum* subg. *Leptostemonum* in Australia, and has perhaps a higher concentration of species than anywhere else in the Old World.

Fig. 11 shows the number of native species occurring in each 1 × 1 degree square. The highest diversity of 16 spp. is recorded for a square straddling the Queensland-New South Wales border, extending from Warwick in the west to Kyogle in the east, and from Cunningham's Gap almost to Tenterfield. This square contains large areas of rainforest, and

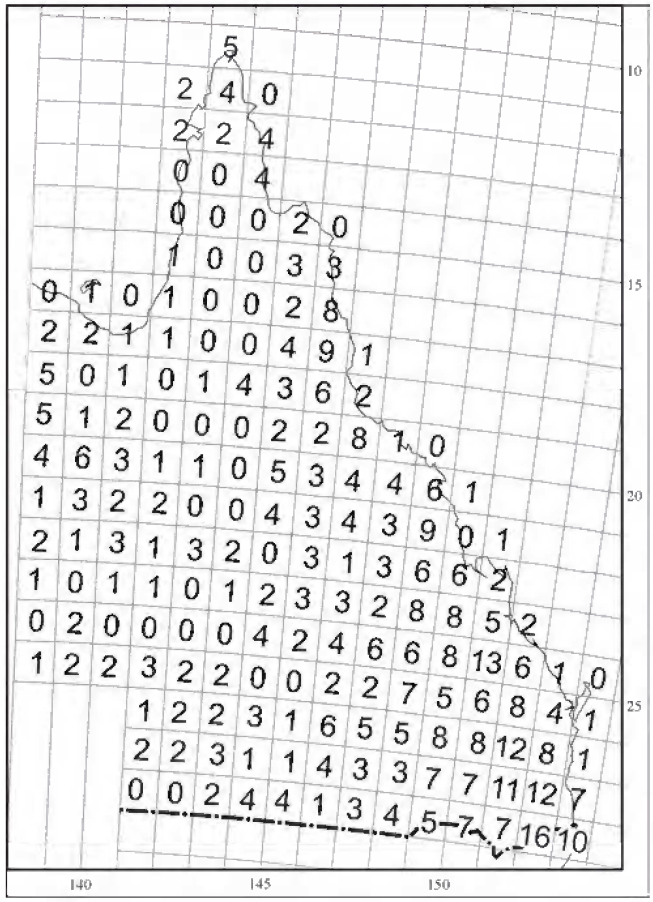

Fig. 11. Number of indigenous species of *Solanum* subg. *Leptostemonum* recorded for each 1° × 1° square in Queensland and far north-eastern New South Wales north of 29° S latitude, based on herbarium records.

includes the highest mountain in southern Queensland (Mt Superbus, 1381 metres). The adjoining square to the east boasts 10 native species, even though half of the square is ocean. This square includes Lamington N.P., Mt Warning, Byron Bay and Lismore. Along a 5 km stretch of road near the Lamington N.P., I have recorded 8 native species (*S. corifolium, S. ditrichum, S. inaequilaterum, S. limitare, S. rixosum, S. semiarmatum, S. serpens, S. stelligerum*), which must surely be the richest area for *Solanum* subg. *Leptostemonum* in Australia.

The next most diverse square (13 spp.) surrounds the town of Biloela. It includes the Kroombit Tops area, Coominglah S.F., the Callide Range and, to the west and north of Biloela, some small remnants of Brigalow forest. All are important havens for *Solanum.*

The three next most diverse squares (with 12, 12, and 11 spp.) are all in the far southeast of Queensland, and all contain areas of high altitude rainforest, of which the most notable is the Bunya Mountains. There are 6 spp. at the Bunya Mountains.

Away from the southeast quarter of the state, the highest diversity (9 spp.) is found in the square that includes Nebo, Mirani, Dipperu N.P. and Eungella. The Eungella N.P. is an area of high altitude rainforest containing an endemic species (*S. francisii*), while Dipperu N.P. and adjacent uncleared areas are dominated by Brigalow forest. The critically endangered *S. adenophorum* has been recorded from Dipperu N.P.

Further north, the square that includes the Atherton Tableland has 9 spp., and the

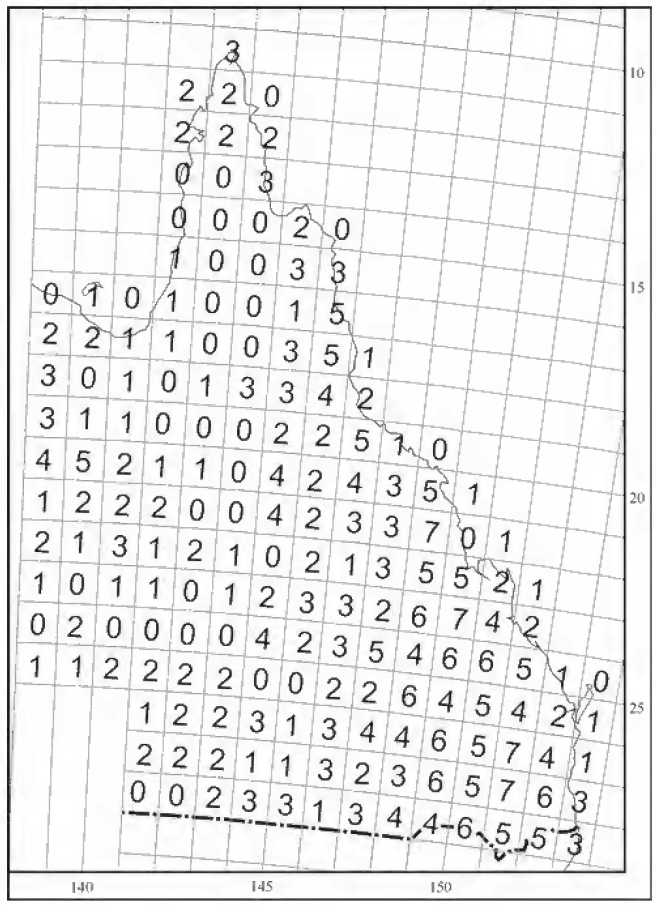

Fig. 12. Number of informal groups of *Solanum* subg. *Leptostemonum* present in each 1° × 1° square in Queensland and far north-eastern New South Wales north of 29° S latitude, based on herbarium records (includes only those groups that contain indigenous species).

square immediately to its north has 8 spp. Both of these squares have large areas of rainforest, much of it at high altitudes.

In general, as one moves further from the coast, the species diversity decreases, strongly correlated with the decreasing rainfall, but even in the far southwest of Queensland, some species occur, *e.g. S. oligacanthum, S. sturtianum*. In the arid parts of the state, the highest diversity (6 spp.) is achieved in the square surrounding Mt Isa.

Two of Queensland's biogeographic regions (Thackway & Cresswell 1995) have a very depauperate *Solanum* flora. The "Gulf Plains", a bioregion characterised by extensive marine plains, alluvial clay plains and areas of sandy outwash, apparently has no species at all, except for *S. pugiunculiferum* near the coast. The "Cape York Peninsula" biogeographic region has solanums only in rainforest areas; the extensive *Eucalyptus* and *Melaleuca* woodlands are apparently *Solanum*-free zones.

Fig. 12 shows the distribution of informal groups (see Classification section, above) across Queensland and northeastern New South Wales. The highest diversity per square is 7 groups, known from four squares (Duaringa area, Eungella–Nebo area, Kingaroy–Bunya Mtns area, Dalby–Toowoomba–Milmerran area). This level of group diversity exceeds all other parts of the Old World, based on Whalen (1984), but is still less diverse than some areas in South America.

Table 1. The most widespread taxa in Queensland, based on the number of 1°× 1° squares in which they are found.

Species	Number of 1° × 1° squares
S. ellipticum	72
S. esuriale	55
S. ferocissimum	25
S. parvifolium subsp. *parvifolium*	24
S. stelligerum	17
S. mitchellianum	17
S. jucundum	17
S. viridifolium	15
S. nemophilum	13
S. galbinum	13
S. furfuraceum	12
S. corifolium	12
S. chippendalei	10
S. quadriloculatum	10

Taxonomy

Key to informal taxonomic groups of *Solanum* subg. *Leptostemonum* (as listed above)

1. Mature fruits with juicy mesocarp, exocarp thin, bright red or black; fruits relatively small (mostly <12 mm diameter) 2
   Mature fruits with mesocarp dry to moist but not juicy, exocarp thick, often green to yellow, occasionally orange or purple, rarely red; fruits larger (mostly >12 mm diameter) 5

2. Some or all inflorescences branched 3
   All inflorescences unbranched **or** pseudo-umbellate 4

3. Mature fruits black; branchlets very prickly; leaves with stellate hairs; flowers 5-merous ..... **13A. S. semiarmatum group**
   Mature fruits red; branchlets without prickles; fully expanded leaves glabrous; flowers 4 or 5-merous ..... **5. S. dunalianum group**

4. Plants completely without prickles; calyx lobes elliptic, exceeding mature fruits; inflorescences pseudo-umbellate, without common peduncle ..... **9A. S. densevestitum group**
   Plants at least sparsely prickly, calyx lobes various, but not elliptic and not exceeding mature fruits; common peduncle present ..... **13. S. ferocissimum group**

5. Inflorescences with dimorphic flowers (1 or more very prickly bisexual flowers at base with several less-prickly smaller male flowers beyond, or plants dioecious) 6
   Inflorescences with flowers all of similar size and prickliness, although functionally male flowers may be frequent 7

6. Inflorescence with few distal male flowers; fruiting calyx not markedly accrescent, not enclosing fruit; style with indumentum ..... **29. S. incanum group**
   Inflorescence with numerous male flowers on long rachis; fruiting calyx accrescent, tube often enclosing fruit; style glabrous ..... **28. S. dioicum group**

7. Calyx prickles absent, or with 1–5 per flower 8
   Calyx moderately to densely prickly (10–200 per flower) 12

8. Stellate hairs absent from stems, leaves and calyx; corolla radius 4–5 mm; anthers 1.5–2 mm long ..... **25A. S. pugiunculiferum group**
   Stellate hairs present; corolla radius 7–20 mm; anthers 3–9 mm long 9

9. Prickles on branchlets 1–4 times longer than broad, recurved 10
   Prickles on branchlets 5–20 times longer than broad, straight 11

10. Inflorescence branched; plants shrubby ..... **14. S. torvum group**
    Inflorescence unbranched; plants vine-like, scrambling ..... **27A. S. hamulosum group**

11. Stellae with 8 or fewer lateral rays; leaves mostly green on the upper surface ..... **27B. S. macoorai group**
    Many stellae with more than 8 rays; leaves usually with dense indumentum on both sides ..... **27C. S. esuriale group**

12. Leaves with finger hairs only ..... **23. S. mammosum group**
    Leaves with stellate hairs, finger hairs sometimes also present 13

13. Fruits completely enclosed by accrescent calyx 14
    Fruits readily visible, calyx not accrescent 15

14. All anthers similar; leaves entire or with shallow lobes ..... **27E. S. echinatum group**
    One anther much longer than the other four; leaves deeply lobed ..... **33. S. rostratum group**

15. Leaves ± entire, upper surface moderately to very densely hairy; perennial shrubs; finger hairs rarely present; petioles not winged ..... **27. S. ellipticum group**
    Leaves shallowly to deeply lobed, upper surface glabrous or sparsely hairy; herbaceous resprouters; finger hairs frequently present; petioles frequently winged ..... **25. S. hystrix group**

Dichotomous key to the Queensland species of *Solanum* subg. *Leptostemonum*

Notes: i.) This key is designed for the identification of dried herbarium specimens. Although macroscopic characters have been used wherever possible, microscopic examination of the stellate hairs will be necessary in some instances. Neither open flowers nor mature fruits are required to successfully operate this key, but frequently some fertile material with intact calyces will be needed.

ii) 'leaves' are adult leaves unless otherwise stated; similarly 'branchlets' are adult branchlets

iii.) leaf lobing index = length of lobe halfway along lamina divided by parallel length of adjacent sinus (**Fig. 1**). Used to quantify degree of lobing; entire leaves have an index of 1, deeply lobed leaves have an index >2.

iv.) the fruit diameters and colours given apply to fresh mature fruits

v.) finger hairs - uniseriate unbranched (simple) hairs consisting of more than one cell, and usually 0.5–5 mm long.

vi.) Type 2 hairs - very short trichomes (<0.1

mm long), normally with one stalk cell, and a transparent multicellular glandular head.

vii.) stellate hair density

very dense - stellae overlapping, multi-layers, subtending surface not visible with hand lens

dense - stellae overlapping, 0.1–0.5 diameters apart, subtending surface visible

moderate - stellae overlapping, 0.5–1 diameter apart, centre to centre

sparse - stellae not overlapping, 1–2 diameters apart, centre to centre

very sparse - stellae not overlapping, > 2 diameters apart, centre to centre.

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1. Leaf margins with 2 or more pairs of deep lobes (lobing index >2) OR leaf base hastate . 2
   Leaf margins entire or shallowly lobed throughout (lobing index 1–2) 23

2. Some or all leaves with hastate base 3
   Leaves deeply lobed throughout, never hastate 6

3. Stellae of lower leaf surface with central ray 1.5–3 times as long as laterals .. **21. S. latens**
   Stellae of lower leaf surface with central ray 0–1 times as long as laterals 4

4. Corolla rotate, mature fruits green, 11–16 mm diameter; pedicels 0.8–0.9 mm thick at anthesis ..... **73. S. amblymerum**
   Corolla deeply lobed, mature fruits red, 6–9 mm diameter; pedicels 0.2–0.7 mm thick at anthesis 5

5. Lamina 1.1–2.6 cm wide at midpoint; branchlet prickles broad-based (4–7 times longer than wide); fruiting pedicels 8–12 mm long ..... **24. S. chenopodinum**
   Lamina 0.2–0.7 cm wide at midpoint; branchlet prickles acicular (9–13 times longer than wide); fruiting pedicels 13–16 mm long ..... **20. S. ferocissimum**

6. Stellate hairs completely lacking from branchlets and leaves 7
   At least some stellate hairs present on branchlets or leaves 11

7. Finger hairs present on leaves 8
   Finger hairs absent from leaves (Type 2 hairs sometimes present) 9

8. Finger hairs gland-tipped ..... **39. S. adenophorum**
   Finger hairs not gland-tipped ..... **33. *S. capsicoides**

9. Calyx with 12–40 prickles; petioles 2.1–3.4 cm long ..... **38. S. papaverifolium**
   Calyx unarmed or with 1–4 prickles; petioles 0.3–1.2 cm long 10

10. Calyx with 1–4 prickles; leaf prickles broad-based; fruiting pedicel 5–8 mm long; Bk & Co ..... **44. S. pugiunculiferum**
    Calyx without prickles; leaf prickles acicular; fruiting pedicels 10–19 mm long; Pc & Le ..... **22. S. dissectum**

11. Upper leaf surface stellae dense to very dense 12
    Upper leaf surface stellae absent or very sparse to moderate 13

12. Branchlet stellae 0.25–0.5 mm diameter; prickles 6–70 on lower leaf surface; fruiting calyx tube accrescent, enclosing fruit; dioecious species ..... **85. S. carduiforme**
    Branchlet stellae 0.8–1.3 mm diameter; prickles 0–5 on lower leaf surface; fruiting calyx tube not accrescent, lobes shorter than mature fruit .. **84. S. chippendalei**

13. Fruits completely enclosed by prickly calyx; corolla yellow; style sigmoid ..... **89. *S. rostratum**
Fruiting calyx tube not accrescent; corolla white to purple; style erect 14

14. Branchlets with 350–1400 prickles per dm; mature fruits black 15
Branchlets sparsely to moderately prickly (2–60 prickles per dm); mature fruits green, yellow or red 16

15. Lower leaf surface green; calyx without prickles ..... **27. S. coracinum**
Lower leaf surface white to yellowish; calyx with up to 25 short prickles ..... **29. S. semiarmatum**

16. Lower leaf surface very densely stellate-hairy 17
Lower leaf surface sparsely to moderately stellate-hairy 19

17. Calyx prickles absent or 1–5; lower leaf surface with 0–2 prickles ..... **71. S. nobile**
Calyx prickles 15–65; lower leaf surface with 6–45 prickles 18

18. Branchlet stellae sparse, central ray absent; branchlet prickles 5–9 times longer than wide; mature fruits 12–15 mm diameter ..... **43. S. lacunarium**
Branchlet stellae dense to very dense, central ray present; branchlet prickles 11–16 times longer than wide; mature fruits 17–28 mm diameter ..... **70. S. cinereum**

19. Finger hairs present on lower leaf surface ..... **90. *S. sisymbriifolium**
No finger hairs on lower leaf surface 20

20. Branchlet prickles broad-based, 2–4 times longer than wide ..... **88. *S. linnaeanum**
Branchlet prickles acicular, 10–16 times longer than wide 21

21. Lamina 1.2–2.6 cm long; petiole 0.15–0.45 cm long ..... **41. S. graniticum**
Lamina 3–7 cm long; petiole 0.5–1.8 cm long 22

22. Upper and lower leaf surfaces and calyx with Type 2 hairs; corolla white; pedicels 3–6 mm long at anthesis ..... **40. S. pusillum**
Type 2 hairs absent; corolla purple; pedicels 21–38 mm long at anthesis ..... **42. S. stenopterum**

23. Calyx prickles present on some or all flowers/fruits of inflorescence 24
Calyx prickles absent from all flowers/fruits 50

24. Finger hairs present on branchlets 25
Finger hairs absent from branchlets 27

25. Stellate hairs absent from branchlets and leaves ..... **33. *S. capsicoides**
Stellate hairs present on branchlets and lower leaf surface 26

26. Stellate hairs frequent on upper leaf surface, Type 2 hairs absent; calyx stellae central ray 1–1.5 times as long as laterals; mature fruits 21–26 mm diameter ..... **34. S. ditrichum**
Stellate hairs absent from upper leaf surface, Type 2 hairs present; calyx stellae absent or central ray 4–6 times as long as laterals; mature fruits 11–13 mm diameter ..... **35. S. cookii**

27. Branchlet prickles curved, 2–3 times longer than broad ..... **87. *S. incanum**
Branchlet prickles straight, 5–20 times longer than broad 28

28. Fruiting calyx tube accrescent, covering fruit 29
Fruiting calyx tube not accrescent, and lobes not exceeding mature fruit 30

29. Branchlet prickles 200–660 per dm; petioles 25–55% of lamina length; calyx lobes 3–6 mm long at anthesis; fruiting pedicels 10–18 mm long **82. S. echinatum**
Branchlet prickles 3–80 per dm; petioles 65–115% of lamina length; calyx lobes 1–2.5 mm long at anthesis; fruiting pedicels 20–30 mm long . **83. S. longissimum**

30. Branchlet stellae with central ray 2–4 times as long as laterals; Type 2 hairs present on branchlets and upper leaf surface; fruits densely hairy ..... **86. S. stupefactum**
Branchlet stellae with central ray 0–1.8 times as long as laterals; Type 2 hairs absent; fruits glabrous or with a few scattered hairs 31

31. Stellae of upper leaf surface very sparse to moderate (rarely absent) 32
Stellae of upper leaf surface dense to very dense 43

32. Leaves 2.8–10 cm wide 33
Leaves 0.4–2.7 cm wide 39

33. Calyx prickles 0–11 34
Calyx prickles 12–100 37

34. Leaves 6.5–10 cm wide; Type 2 hairs present on calyx ..... **64. S. francisii**
Leaves 2.8–5.2 cm wide; Type 2 hairs absent from calyx 35

35. Plants erect; leaf lobing index 1.7–2 ..... **71. S. nobile**
Plants prostrate or procumbent; leaf lobing index 1–1.4 36

36. Upper leaf surface green, stellae very sparse or confined to midrib; calyx prickles 0–2 ..... **60. S. acanthodapis**
Upper leaf surface grey-green, stellae density moderate; calyx prickles 5–11 ..... **45. S. ellipticum**

37. Upper leaf surface with 2–20 prickles, stellae 0.1–0.5 mm apart; lower leaf surface white or yellowish, stellae 0.05–0.3 mm apart ..... **45. S. ellipticum**
Upper leaf surface with 100–400 prickles, stellae 0.6–2.5 mm apart; lower leaf surface green, stellae 0.3–2.2 mm apart 38

38. Leaves entire or obscurely lobed, apex obtuse; common peduncle 17–27 mm long; mature fruits yellowish-green or green; Nk & Co ..... **36. S. multiglochidiatum**
Leaves with distinct acute lobes, apex acute; common peduncle 0–8 mm long; mature fruits purple; Wb, Mo & Dd ..... **37. S. vicinum**

39. Branchlet stellae sparse; pedicels 21–38 mm long at anthesis; petioles winged; stellae of lower leaf surface 0.8–3 mm apart ..... **42. S. stenopterum**
Branchlet stellae dense to very dense; pedicels 3–20 mm long at anthesis; petioles not winged; stellae of lower leaf surface 0.05–0.7 mm apart 40

40. Leaves 1.6–2.9 times longer than broad 41
Leaves 3–14 times longer than broad 42

41. Leaves ± entire, 3.5–14 cm long ..... **45. S. ellipticum**
Leaves conspicuously lobed, 1.2–2.6 cm long ..... **41. S. graniticum**

42. Leaves 1.5–4 cm long, lower surface stellae sparse to dense; Co ..... **51. S. angustum**
Leaves 7–10.5 cm long, lower surface stellae very dense; Mo, Dd, Bn .... **72. S. limitare**

43. Calyx of basal flower(s) within an inflorescence larger and more prickly, and pedicel(s) thicker, compared to calyces and pedicels of distal flowers ..... **84. S. chippendalei**
Each inflorescence with all flowers/fruits having calyces all about the same size and prickliness, and pedicels all about the same thickness 44

44. Leaves linear to lanceolate (l/b ratio 3.8–14)..... 45
Leaves ovate to broadly ovate (l/b ratio 1.6–2.9)..... 46

45. Branchlet stellae 0.4–0.5 mm diameter, lateral rays 15–18; calyx stellae with 13–20 lateral rays; anthers 7–9 mm long; seeds brown to black ..... **78. *S. elaeagnifolium**
Branchlet stellae 0.7–0.9 mm diameter, lateral rays 8–12; calyx stellae with 6–9 lateral rays; anthers 3.5–5 mm long; seeds pale yellow ..... **77. S. esuriale**

46. Branchlet prickles absent; calyx prickles 1–4 ..... **46. S. dianthophorum**
Branchlet prickles present; calyx prickles 5–70 47

47. Plants erect, 0.3–0.6 m high; calyx prickles 40–70..... 48
Plants prostrate or sprawling, 0.1–0.3 m high; calyx prickles 5–40(–50) 49

48. Leaf base cuneate; lower leaf surface rusty; calyx stellae 0.4–0.6 mm diameter..... **48. S. senticosum**
Leaf base obtuse or cordate; lower leaf surface yellowish; calyx stellae 0.7–0.9 mm diameter ..... **47. S. crebrispinum**

49. Calyx prickles stout, rigid; branchlets terete; inflorescence 1–9 flowered, rachis prickles present; stalks of stellae on upper leaf surface 0–0.3 mm long ..... **45. S. ellipticum**
Calyx prickles flimsy, scarcely rigid; branchlets ridged; inflorescence 9–15 flowered, rachis prickles absent; stalks of stellae on upper leaf surface 0–1.0 mm long ..... **49. S. quadriloculatum**

50. Leaves linear to lanceolate (l/b ratio 3.3–15)..... 51
Leaves ovate, broadly ovate, elliptical or orbicular (l/b ratio 0.8–3.2) 76

51. Leaf upper surface stellae dense to very dense..... 52
Leaf upper surface stellae absent or density very sparse to moderate 59

52. Calyx lobes elliptical, exceeding mature fruits; central ray of stellae (upper leaf surface) 3–6 times as long as laterals ..... **5. S. innoxium**
Calyx lobes deltate to attenuate, not exceeding mature fruits; central ray of stellae (upper leaf surface) absent or up to 1.7 times as long as laterals..... 53

53. Finger hairs present on calyx and upper leaf surface; bark corky ..... **76. S. versicolor**
Finger hairs absent from plant; bark not corky 54

54. Type 2 hairs present on branchlets and lower leaf surface; flowers 4-merous..... **79. S. ammophilum**
Type 2 hairs absent; flowers 5-merous..... 55

55. Upper leaf surface with stellae 0.4–0.7 mm diameter 56
Upper leaf surface with stellae 0.15–0.4 mm diameter 57

56. Branchlet stellae 0.4–0.5 mm diameter, lateral rays 15–18; calyx stellae with 13–20 lateral rays; anthers 7–9 mm long; seeds brown to black ..... **78. *S. elaeagnifolium**
Branchlet stellae 0.7–0.9 mm diameter, lateral rays 8–12; calyx stellae with 6–9 lateral rays; anthers 3.5–5 mm long; seeds pale yellow ..... **77. S. esuriale**

57. All stellate hairs lacking a central ray; lower leaf surface stellae with 13–16 lateral rays ..... **80. S. sturtianum**
All stellate hairs with an obvious central ray; lower leaf surface stellae with 7–9 lateral rays 58

58. Branchlet stellae porrect, central ray 0.3–0.7 times as long as laterals; branchlet prickles 0.5–6 mm long; calyx stellae sessile or stalks to 0.1 mm long ..... **61. S. intonsum**
Branchlet stellae porrect to multiradiate, central ray 1–1.5 times as long as laterals; branchlet prickles 6–10 mm long; calyx stellae with stalks 0.1–0.4 mm long ..... **68. S. jucundum**

59. Fruiting pedicels 5–13 mm long 60
Fruiting pedicels 13–33 mm long 67

60. Calyx lobes elliptic, exceeding mature fruit 61
Calyx lobes deltate, rostrate or attenuate, never exceeding mature fruit..... 62

61. Upper leaf surface stellae moderate to dense; branchlet stellae 0.25–0.4 mm diameter, central ray 3–4 times as long as laterals; Dd & Ma..... **5. S. innoxium**
Upper leaf surface stellae very sparse to sparse; branchlet stellae 0.6–0.9 mm diameter, central ray 0.4–0.8 times as long as laterals; Mi & Bk ..... **6. S. ultimum**

62. Upper leaf surface stellae 0.05–0.4 mm apart (moderate density) 63
Upper leaf surface stellae 0.4–5 mm apart (very sparse to sparse) 66

63. Leaves linear, 0.3–0.6 cm wide ..... **74. S. galbinum**
Leaves linear to ovate, 0.7–6.5 cm wide 64

64. Upper leaf surface stellae with lateral rays ascending; inner surface of corolla sparsely stellate-hairy ..... **61. S. intonsum**
Upper leaf surface stellae with lateral rays porrect; inner surface of corolla glabrous 65

65. Stellae of upper leaf surface 0.4–0.7 mm across, lateral rays 6–12, central ray 0.5–1 times as long as laterals; common peduncle 14–36 mm long .. **77. S. esuriale**
Stellae of upper leaf surface 0.15–0.3 mm across, lateral rays 13–15, central ray absent; common peduncle 3–5 mm long ..... **80. S. sturtianum**

66. Upper leaf surface stellae 0.1–0.2 mm diameter and 0.4–0.7 mm apart; mature fruits 11–16 mm diameter, green ..... **73. S. amblymerum**
Upper leaf surface stellae 0.3–0.5 mm diameter and 0.8–5 mm apart; mature fruits 6–8 mm diameter, red ..... **19a. S. parvifolium** subsp. **parvifolium**

67. Stellate hairs absent from fully expanded leaves ..... **23. S. lythrocarpum**
Stellate hairs present on fully expanded leaves 68

68. Lower leaf surface stellae with central ray 1.5–6 times as long as laterals..... 69
Lower leaf surface stellae with central ray 0–1 times as long as laterals 71

69. Leaves 0.3–0.8 cm wide; lower surface green, with stellae 0.3–2 mm apart .. **21. S. latens**
Leaves 0.9–4.5 cm wide; lower surface white, yellowish or rusty, with stellae 0.05–0.2 mm apart 70

70. Petioles 3–7% length of lamina; pedicels 4–7 mm long at anthesis; leaves often with shallow lobes; Cape York Peninsula ..... **10. S. fervens**
Petioles 11–16% length of lamina; pedicels 8–15 mm long at anthesis; leaves entire; Nk, Pc, Wb, Dd, Bn, Mo ..... **18. S. stelligerum**

71. Branchlet stellae 0.7–0.9 mm diameter; common peduncle 14–36 mm long **77. S. esuriale**
Branchlet stellae 0.2–0.6 mm diameter; common peduncle 0–7 mm long 72

72. Upper leaf surface grey-green; herbaceous resprouter; mature fruits green . **72. S. limitare**
Upper leaf surface green; perennial shrubs; mature fruits red 73

73. Leaves lanceolate to ovate, stellae absent from upper surface; mature fruits 10–14 mm diameter; Cape York peninsula only ..... **13. S. discolor**
Leaves linear to narrow-lanceolate; stellae very sparse to moderate on upper surface; mature fruits 5–9 mm diameter; never on Cape York peninsula 74

74. Seeds 3.0–3.6 mm long; prickles present on both leaf surfaces ..... **20. S. ferocissimum**
Seeds 1.9–2.4 mm long; prickles absent from leaves 75

75. Leaves 2.3–7 × 0.5–1.5 cm, Type 2 hairs absent; style 3.8–6.5 mm long; flowers all bisexual ..... **19a. S. parvifolium** subsp. **parvifolium**
Leaves 7–13.7 × 1.3–3.6 cm, Type 2 hairs present; style 6.5–9.0 mm long; male flowers present in the inflorescence ..... **19b. S. parvifolium** subsp. **tropicum**

76. Upper leaf surface with moderate to very dense stellate indumentum 77
Upper leaf surface glabrous or stellate indumentum very sparse to sparse 97

77. Calyx lobes elliptic, exceeding mature fruit; branchlet prickles absent 78
Calyx lobes deltate, rostrate, hemispherical or attenuate, not exceeding mature fruit; branchlet prickles absent or present 83

78. Stellae of branchlets, upper and lower leaf surface, and calyx all sessile 79
At least some stellae on branchlets, leaves and calyx with conspicuous stalks (*i.e.* stalks at least 0.2 mm long, and up to 2 mm long) 81

79. Leaves broadly ovate; petioles 30–55% of lamina length; subshrub 0.1–0.25 m high ..... **4. S. johnsonianum**
Leaves lanceolate to ovate; petioles 11–25% of lamina length; shrubs 0.3–1 m high 80

80. Leaves 2.3–3.5 cm wide; mature fruits globular, 5–6.5 mm diameter; Mo .. **3. S. hapalum**
Leaves 0.8–2 cm wide; mature fruits ellipsoidal, 3–4.5 mm diameter; Ma, Dd **5. S. innoxium**

81. Some stellae of branchlets, leaves and calyx with gland-tipped central ray; leaves usually slightly lobed; ovary glabrous ..... **9. S. gympiense**
No stellae with gland-tipped central ray; leaves entire; ovary with stellate or Type 2 hairs 82

82. Stellae of upper leaf surface with 4–6 lateral rays, central ray 3–6 times as long as laterals, stalks absent ..... **7. S. densevestitum**
Stellae of upper leaf surface with 7 or 8 lateral rays, central ray 0.7–1.8 times as long as laterals, stalks 0.1–0.3 mm long ..... **8. S. nemophilum**

83. Leaves 0.8–1.7 times longer than broad 84
Leaves 1.7–3.2 times longer than broad 88

84. Lamina 1–2.5 cm long, petioles 0.1–0.3 cm long; stellae of upper surface with 12–16 lateral rays ..... **81. S. oligacanthum**
Lamina 3.5–35 cm long, petioles 0.9–7.2 cm long; stellae of upper surface with 4–10 lateral rays 85

85. Stellae of upper leaf surface with central ray 4–10 times as long as laterals; mature fruits conspicuously tomentose, 25–35 mm diameter ..... **32. S. lasiocarpum**
Stellae of upper leaf surface with central ray 0.8–3 times as long as laterals; mature fruits glabrous, 8–17 mm diameter 86

86. Branchlet prickles straight, acicular, 10–17 times longer than broad; inflorescence unbranched or flowers solitary, 1–4 flowered ..... **52. S. argopetalum**
Branchlet prickles curved, broad-based, 1.5–3 times longer than broad; inflorescence branched, 13–65 flowered 87

87. Finger hairs absent from calyx and pedicels; new growth rusty .... **30. *S.chrysotrichum**
Finger hairs present on calyx and pedicels; new growth white or grey .... **31. *S. torvum**

88. Leaves 0.5–1.5 cm long ..... **75. S. elachophyllum**
Leaves 2.5–16.5 cm long 89

89. Branchlet prickles 0–20 per dm 90
Branchlet prickles 21–1400 per dm 95

90. Calyx with Type 2 hairs or finger hairs (as well as stellate hairs); bark corky 91
Calyx with stellate hairs only; bark not corky, non-descript 92

91. Calyx with stellate hairs and Type 2 hairs; shrub 1–3 m high ..... **62. S. furfuraceum**
Calyx with stellate hairs and finger hairs; subshrub 0.1–0.3 m high ..... **76. S. versicolor**

92. Subshrubs 0.3–0.6 m high, herbaceous resprouters ..... **69. S. centrale**
Shrubs 0.6–2 m high, perennials 93

93. Stellae stalks (branchlets and calyx) up to 2.2 mm long; corolla rotate; common peduncle 15–33 mm long ..... **67. S. cocosoides**
Stellae stalks (branchlets and calyx) up to 0.4 mm long; corolla shallowly or deeply lobed; common peduncle 0–12 mm long 94

94. Type 2 hairs absent from upper leaf surface; branchlet stellae with porrect lateral rays; stellae of lower leaf surface 0.4–0.6 mm diameter ..... **61. S. intonsum**
Type 2 hairs present on upper leaf surface; branchlet stellae with lateral rays porrect, ascending, or multiradiate; stellae of lower leaf surface 0.2–0.4 mm diameter ..... **68. S. jucundum**

95. Branchlet prickles broad, recurved, 1–2.5 times longer than broad .... **54. S. hamulosum**
Branchlet prickles acicular, straight, 10–20 times longer than broad 96

96. Inflorescence 1 or 2 flowered; branchlet prickles 30–160 per dm; prickles absent from leaves ..... **50. S. crassitomentosum**
Inflorescence 7–25 flowered; branchlet prickles 240–1400 per dm; prickles present on both leaf surfaces ..... **28. S. mitchellianum**

97. Leaves 0.5–1.5 × 0.3–0.7 cm ..... **75. S. elachophyllum**
Leaves 2.5–26 × 0.9–19 cm 98

98. Plants prostrate, stoloniferous, rooting at the nodes 99
Plants erect or sprawling, but not prostrate or stoloniferous 101

99. Stellae of lower leaf surface lacking a central ray; mature fruits red ..... **15. S. mentiens**
Stellae of lower leaf surface with clearly visible central ray; fruits green to yellowish-green 100

100. Stellae of branchlets with central ray 0.5–1.5 times as long as laterals; upper leaf surface with 20–60 prickles; prickles present on lower leaf surface ..... **60. S. acanthodapis**
Stellae of branchlets with central ray 4–9 times as long as laterals; upper leaf surface with 0–8 prickles; lower leaf surface without prickles ..... **59. S. serpens**

101. Calyx lobes elliptic and exceeding mature fruit; large stems without prickles ..... **6. S. ultimum**
Calyx lobes deltate, rostrate or attenuate, not exceeding mature fruit; at least large stems with some prickles 102

102. Calyx and pedicel with finger hairs 103
Finger hairs absent from calyx and pedicel 105

103. Leaves 1.1–1.5 times longer than broad, lower surface white ..... **31. *S. torvum**
Leaves 1.9–2.7 times longer than broad, lower surface green 104

104. Calyx lobes 2–3.5 mm long at anthesis; fruiting pedicels *c.* 15 mm long; lower leaf surface with 11–17 prickles; Co ..... **25. S. dysprosium**
Calyx lobes 4–9 mm long at anthesis; fruiting pedicels 26–38 mm long; lower leaf surface with 0–9 prickles; Mo ..... **26. S. inaequilaterum**

105. Stellate hairs absent from petioles and *lower* surface of fully expanded leaves; inflorescences mostly branched; branchlet prickles absent 106
Stellate hairs present on petioles or *lower* surface of fully expanded leaves; inflorescences mostly unbranched; branchlet prickles usually present 107

106. Petioles 7–10% of lamina length; common peduncle 5–8 mm long; calyx densely stellate-hairy, stellae with central ray deflexed; style 7–8 mm long ..... **1. S. dunalianum**
Petioles 17–30% of lamina length; common peduncle 12–23 mm long; calyx sparsely stellate-hairy, stellae with central ray erect; style 4.5–5.5 mm long ..... **2. S. viridifolium**

107. Branchlet prickles present, curved, broad-based, 1–5 times longer than broad 108
Branchlet prickles absent or present (and then straight, 6–20 times longer than broad) 110

108. Leaves 9–19 cm wide; branchlet stellae on thick stalks 0.1–1 mm long; inflorescence 3 or 4 branched (paniculate) ..... **30. *S. chrysotrichum**
Leaves 4.5–7.5 cm wide; branchlet stellae sessile or with short thready stalks; inflorescences pseudo-racemose 109

109. Leaves 1.9–2.5 times longer than broad, entire or with obtuse lobes; stellae of branchlets and lower leaf surface lacking a central ray .... **53. S. dimorphispinum**
Leaves 1.4–1.8 times longer than broad, with acute lobes; stellae of branchlets and lower leaf surface with central ray 0.3–0.6 times as long as laterals ..... **55. S. eminens**

110. Branchlets with corky outgrowths, large stems very corky 111
Branchlets without corky outgrowths, large stems not corky 112

111. No finger hairs on upper leaf surface; stellae of lower leaf surface with central ray 0.3–0.7 times as long as laterals; leaves consistently lobed ..... **63. S. sporadotrichum**
Finger hairs present on upper leaf surface; stellae of lower leaf surface with central ray 1–2 times as long as laterals; leaves usually entire **62. S. furfuraceum**

112. All stellae on lower leaf surface stalked (stalks 0.15–0.6 mm long) 113
Some or all stellae on lower leaf surface sessile 114

113. Stellae on upper leaf surface absent or confined to midrib; mature fruits red, 6–7 mm diameter ..... **17. S. dryanderense**
Stellae distributed throughout upper leaf surface; mature fruits yellowish-green to green, 19–24 mm diameter ..... **58. S. rixosum**

114. Stellae of lower leaf surface with central ray absent or up to 0.6 times as long as laterals 115
Stellae of lower leaf surface with central ray 0.7–6 times as long as laterals 119

115. Lower leaf surface white to yellowish, stellae dense to very dense 116
Lower leaf surface green, stellae very sparse to moderate 118

116. Stellae of lower leaf surface without a central ray ..... **14. S. corifolium**
Stellae of lower leaf surface with central ray 0.1–0.5 times as long as laterals 117

117. Lower leaf surface stellae very dense, *c.* 0.05 mm apart ..... **13. S. discolor**
Lower leaf surface stellae dense, 0.1–0.3 mm apart ..... **11. S. yirrkalense**

118. Petioles 0.6–1 cm long; stellae absent from upper leaf surface, 0.4–0.6 mm diameter on lower surface; pedicels 0.15–0.25 mm thick at anthesis; Cape York ..... **12. S. defensum**
Petioles 1.4–2.6 cm long; stellae present on upper leaf surface, 0.2–0.3 mm diameter on lower surface; pedicels 0.4–0.7 mm thick at anthesis; Wet Tropics ..... **56. S. macoorai**

119. Branchlet prickles 30–1400 per dm; petiole prickles present 120
Branchlet prickles 0–25 per dm; petioles without prickles 121

120. Branchlet prickles 240–1400 per dm; lamina base obtuse to cordate; inflorescence 7–25 flowered; mature fruits black, 8–9 mm diameter ..... **28. S. mitchellianum**
Branchlet prickles 30–70 per dm; lamina base cuneate; inflorescence 1–3 flowered; mature fruits green, 16–19 mm diameter ..... **65. S. dumicola**

121. Some leaves shallowly lobed 122
All leaves entire 123

122. Petioles 0.4–0.8 cm long; calyx lobes 0.5–1.2 mm long at anthesis; mature fruits red, 9–12 mm diameter ..... **10. S. fervens**
Petioles 1–3.5 cm long; calyx lobes 3–4 mm long at anthesis; mature fruits yellowish-green to yellow, 20–27 mm diameter ..... **57. S. magnifolium**

123. Pedicels 0.8–1.3 mm thick at midpoint; inner surface of corolla stellate-hairy; fruits 4-locular ..... **66. S. tetrathecum**
Pedicels 0.2–0.7 mm thick at midpoint; inner surface of corolla glabrous; fruits 1-locular 124

124. Stellae of lower leaf surface all sessile, stellae 0.1–0.3 mm apart; mature fruits 3.5–6 mm diameter; petioles 5–12% of lamina length ..... **16. S. shirleyanum**
Lower leaf surface with some long-stalked stellae (to 0.6 mm long), stellae 0.05–0.1 mm apart; mature fruits 6.5–9 mm diameter; petioles 11–16% of lamina length ..... **18. S. stelligerum**

Synoptic key to *Solanum* subg. *Leptostemonum*, using characters applicable to live material

Notes on the use of this key: Look through the list of characters and character states below. Choose applicable character states that are not commonly occurring. For example, if your specimen has orange fruits, then fruit colour will be a good character to use, because only 5 species have orange fruits. Write down all the numbers adjacent to the first character state you chose. Choose a second character, decide on the correct state, and write down the numbers adjacent to that state. Circle the numbers that are common to the two lists. Select a third character, decide on the correct state, and write down the numbers adjacent to that state. Circle the numbers that are common to all three lists. Continue in this way until you reach a single number, and then match that number with the species name in the list appearing directly below the key.

Character	Character State	Taxa possessing that state
Habit	herbaceous resprouter	34–36, 38–46, 49, 51, 52, 66, 69, 72, 76–79, 81, 89
	prostrate stoloniferous	15, 59, 60
	rhizomatous shrub	1–14, 16–33, 45–50, 53, 56–58, 61–64, 67, 68, 70, 71, 73–75, 80–90
	vine or shrubby vine	46, 53–55
Bark	corky	50, 62, 63, 76
	non-descript	most species
Prickles, large stems	absent	1, 3–9, 46
	curved, broad based (1–4 times longer than wide)	24, 30, 31, 53–55, 87, 90
	straight, broad based (4–7 times longer than wide)	2, 16, 24, 31, 32, 43, 44, 61, 64, 67, 68, 71, 78–80, 83, 88–90
	Straight, acicular (7–20 times longer than wide)	10–14, 15–23, 25–29, 32–45, 47, 49–52, 56–58, 60, 62–66, 68–78, 81–86, 89
Adult leaves (length-breadth ratio)	0.8–1.7	4, 7, 9, 15, 22, 24, 27–29, 30–39, 40, 41, 44–45, 47, 49, 50, 52, 54, 55, 59, 60, 63, 65, 70, 71, 75, 81–83, 86–90
	1.8–3	1–18, 22, 24–26, 28, 29, 30, 34, 36–43, 45–51, 53–71, 75, 76, 82–86, 88–90
	3.1–26	1, 5, 6, 10, 12, 13, 17–19, 20, 21, 23, 42, 51, 56, 61, 66, 68, 72–74, 76–80, 84

Lower leaf surface (density of stellate hairs)	absent	1, 2, 22, 23, 27, 33, 38, 39, 44
	very sparse	12, 21, 27, 35, 37, 42, 56
	sparse	12, 20, 21, 26, 34–37, 40–42, 51, 56, 60, 75, 88
	moderate	12, 20, 21, 25, 26, 30, 34–36, 40–42, 51, 56, 57, 59, 60, 63, 64, 75, 88–90
	dense	3, 4, 6–11, 16–18, 20, 24, 29–32, 36, 45, 47, 48, 50–52, 54, 55, 57–63, 65, 66, 75–77, 79, 82–84, 86, 87, 89
	very dense	3–6, 8, 9, 13, 14, 15, 18–20, 24, 28, 29, 32, 43, 45–50, 53, 55, 57, 59, 60, 67–74, 76–82, 84, 85
Corolla colour	white	2, 11, 12, 14, 15, 18, 20, 26, 30–33, 36, 39, 40, 45, 50, 52, 64, 74, 76, 90
	yellow	89
	mauve or purple	most species
Mature fruit colour (or predominant colour)	red	1–24, 26, 56, 90
	black	27–29
	green to yellowish-green	30, 31, 34, 35, 38–41, 45, 47–52, 54, 57–68, 70, 71–77, 79, 84
	yellow	44, 53, 57, 80, 81, 87, 88
	orange	32, 33, 55–56, 86
	brown	44, 80–83
	purple	37
Mature fruit diameter (fresh)	3–9.0 mm	1–10, 14, 16–25, 27, 28, 44, 46, 80, 81, 89
	9.1–13.0 mm	10, 12–15, 23, 26, 29, 31, 35, 42–46, 48, 54, 63, 66, 73–81, 89
	13.1–16.0 mm	11–13, 30, 31, 36, 39–41, 43, 45, 47–52, 54, 59–62, 64–68, 72–75, 77, 78, 82, 90
	16.1–45 mm	12, 31–34, 36, 37, 45, 49–51, 53, 55–58, 60–62, 64–67, 70–72, 82, 84–88, 90
Calyx prickle number	zero	most species
	1–35	29, 33, 35, 38–46, 49, 51, 60, 64, 70–72, 77, 78, 83–88, 90
	36–600	34, 36–38, 41, 42, 45, 48, 49, 70, 82–85, 88, 90
Seed colour (fresh)	white to pale yellow	most species
	brown to black	27, 28, 32, 50, 66–68, 70, 75, 78, 80–82, 84, 86–89
Distribution (Pastoral district)	Mo or Wb or NE NSW	3, 7–9, 14–16, 18, 26, 29–31, 33, 34, 37, 45, 58–60, 66, 72, 73, 78, 86, 88, 89
	Dd	5, 8, 14, 18–21, 27–29, 34, 37, 38, 42, 45, 58, 66, 68, 70–73, 77, 78, 86, 89, 90
	Bn or Pc	2, 4, 8, 9, 14, 18, 19, 21–23, 28, 30, 31, 33, 42, 45, 46, 58, 62, 66, 68, 72, 77, 78, 86, 87, 89
	Le or Sk	2, 4, 7–9, 19–22, 27, 28, 31, 33, 39–41, 45, 47, 62–65, 67, 68, 74, 75, 77, 88

Nk	2, 14, 17–19, 31, 35, 36, 41, 45, 50, 54, 56, 57, 62, 63, 74, 77
Co	1, 2, 10–14, 19, 25, 31–33, 35, 36, 44, 45, 51, 53, 54–57, 61, 74, 83, 85
Ma, Wa, Gs, Gn, Mi or Bk	5, 6, 9, 19, 20, 24, 28, 31, 43–45, 48–50, 52, 62, 65, 67–69, 74, 76, 77, 79–85

01. *S. dunalianum*
02. *S. viridifolium*
03. *S. hapalum*
04. *S. johnsonianum*
05. *S. innoxium*
06. *S. ultimum*
07. *S. densevestitum*
08. *S. nemophilum*
09. *S. gympiense*
10. *S. fervens*
11. *S. yirrkalense*
12. *S. defensum*
13. *S. discolor*
14. *S. corifolium*
15. *S. mentiens*
16. *S. shirleyanum*
17. *S. dryanderense*
18. *S. stelligerum*
19. *S. parvifolium*
20. *S. ferocissimum*
21. *S. latens*
22. *S. dissectum*
23. *S. lythrocarpum*
24. *S. chenopodinum*
25. *S. dysprosium*
26. *S. inaequilaterum*
27. *S. coracinum*
28. *S. mitchellianum*
29. *S. semiarmatum*
30. *S. chrysotrichum*
31. *S. torvum*
32. *S. lasiocarpum*
33. *S. capsicoides*
34. *S. ditrichum*
35. *S. cookii*
36. *S. multiglochidiatum*
37. *S. vicinum*
38. *S. papaverifolium*
39. *S. adenophorum*
40. *S. pusillum*
41. *S. graniticum*
42. *S. stenopterum*
43. *S. lacunarium*
44. *S. pugiunculiferum*
45. *S. ellipticum*
46. *S. dianthophorum*
47. *S. crebrispinum*
48. *S. senticosum*
49. *S. quadriloculatum*
50. *S. crassitomentosum*
51. *S. angustum*
52. *S. argopetalum*
53. *S. dimorphispinum*
54. *S. hamulosum*
55. *S. eminens*
56. *S. macoorai*
57. *S. magnifolium*
58. *S. rixosum*
59. *S. serpens*
60. *S. acanthodapis*
61. *S. intonsum*
62. *S. furfuraceum*
63. *S. sporadotrichum*
64. *S. francisii*
65. *S. dumicola*
66. *S. tetrathecum*
67. *S. cocosoides*
68. *S. jucundum*
69. *S. centrale*
70. *S. cinereum*
71. *S. nobile*
72. *S. limitare*
73. *S. amblymerum*
74. *S. galbinum*
75. *S. elachophyllum*
76. *S. versicolor*
77. *S. esuriale*
78. *S. elaeagnifolium*
79. *S. ammophilum*
80. *S. sturtianum*
81. *S. oligacanthum*
82. *S. echinatum*
83. *S. longissimum*
84. *S. chippendalei*
85. *S. carduiforme*
86. *S. stupefactum*
87. *S. incanum*
88. *S. linnaeanum*
89. *S. rostratum*
90. *S. sisymbriifolium*

Solanum subg. Leptostemonum (Dunal) Bitter, Bot. Jahrb. Syst. 55: 68 (1919); *S.* sect. *Leptostemonum* Dunal in A.DC., Prodr. 13(1): 183 (1852). **Type:** *S. mammosum* L., lecto, *fide* D'Arcy, Ann. Missouri Bot. Gard. 59: 270 (1973).

Herbaceous resprouters, perennial vines, shrubs, or small trees. **Prickles usually present** on stems and petioles, sometimes on leaves and calyces, rarely on corolla, but in a very few species absent altogether. **Stellate hairs usually present** on many parts of the plant, rarely absent. Leaves often having two distinct ontogenetic stages. Juvenile leaves larger, more deeply lobed and more prickly. Adult leaves usually two per sympodial unit (in Queensland), entire or variously lobed, the base oblique on all or some leaves. Inflorescence cymose, often appearing racemose or paniculate, or reduced to a single flower. All flowers bisexual, or distal flowers functionally male (andromonoecious), or rarely dioecious. Flowers actinomorphic (in Queensland), mostly 5-merous, some species always or predominantly 4-merous. Calyx fused, often accresent in fruit. Corolla lobes fused, variously lobed. Stamens equal in size and shape (in Queensland); **anthers attenuate,** yellow, glabrous (in Queensland), dehiscing by terminal pores. Ovary 1–4-locular, the placenta variously lobed. Fruit a juicy or mucilaginous (rarely dry) berry; stone cells absent. Seeds lenticular, subreniform, the testa with fine reticulated ornamentation.

About 500 species, throughout the world, mainly in tropical and subtropical regions.

Group 5 (S. dunalianum group) of Whalen (1984)

Large shrubs or small trees (100%); adult leaves entire (100%); branchlet prickles absent (100%); Stem prickles sparse, broad-based (100%); stellate hairs present only on young vegetative growth and inflorescences (100%); flowers all bisexual (100%); flowers often 4-merous (100%); mature fruits red, juicy, succulent, 1-locular, <9 mm diameter, exocarp <0.5 mm thick (100%); inflorescences 2–3-branched (83%).

c. 15 species extending from Malesia to the western Pacific. 3 species indigenous to Australia, 2 species indigenous to Queensland.

The species allied to *S. vaccinioides* (all endemic to New Caledonia) were included in this group by Whalen (*loc. cit.*). However they seem to have little in common with *S. dunalianum* and related species.

1. Solanum dunalianum Gaudich. in Freyc., Voyage Uranie 448 (1829), t. 58 (1828). **Type:** Moluccas, Pisang, [December 1818], *C. Gaudichaud-Beaupré s.n.* (lecto: P), here designated.

***Illustration*:** Symon (1981: 119)

Erect, rhizomatous perennial shrub, 2–4 m high. Leaves (in outline) ovate, entire; lamina *c.* 35 × 15 cm, without prickles on upper surface. Adult branchlets brown; prickles absent; stellae absent or sparse, 0.25–0.35 mm diameter, sessile; lateral rays 7–9, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire; lamina 13–23 cm long, 4.3–7.5 cm wide, 2.8–3.1 times longer than broad, apex acute, base cuneate, oblique part 0–15 mm long, obliqueness index 0–9 percent; petioles 1–1.8 cm long, 7–10% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles absent; stellae absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, 2-branched, common peduncle 5–8 mm long, rachis prickles absent; 15–25-flowered, with all flowers bisexual and 4 or 5-merous; pedicels 4–7 mm long at anthesis, markedly thicker distally, 0.4–0.7 mm thick at mid-point, prickles absent. Calyx tube 1.5–2 mm long, lobes deltate, 0.3–1 mm long; prickles absent at anthesis; stellae sparse to very dense, yellow or white, 0.15–0.25 mm across, sessile, lateral rays 7–9, central ray 0.6–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 7–9 mm long, deeply lobed, inner surface sparsely stellate-hairy; anthers 4.5–5.5 mm long; ovary glabrous; functional style 7–8 mm long, erect, with stellate hairs only, stellae 0.25–0.3 mm across, lateral rays 8–11, central ray 0.5–0.8 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 3–13 per

inflorescence, globular, 8–9 mm diameter, red, 1-locular (septum absent or incomplete); mesocarp juicy, succulent; pedicels 8–16 mm long in fruit, 0.8–1 mm thick at mid-point; seeds pale yellow, 2–2.7 mm long.

***Specimens examined*: Queensland.** Cook District: Embley River, 10 miles [16 km] S of Weipa, Aug 1974, *Swan* 141 (AD, BRI, CANB); Weipa South, behind old airstrip, Jul 1980, *Tucker* AM762 (BRI); Possum Scrub, Jun 1994, *Forster* PIF15276 & *Tucker* (AD, BRI).

***Distribution and habitat*:** In Queensland, *Solanum dunalianum* is known only from the vicinity of Weipa on Cape York Peninsula (**Map 1**). Also known from Malesia (New Guinea and some nearby islands). Queensland specimens are recorded from the edges of semi-deciduous rainforest, on 'red lateritic ridges'.

Phenology: Both flowers and mature fruits have been recorded for June, July and August.

Notes: *S. dunalianum* is close to *S. viridifolium*, but *S. dunalianum* in Australia has young leaves and petioles with stellate hairs (*vs.* glabrous for *S. viridifolium*); petioles 7–10% of lamina length (*vs.* 15–30% for *S. viridifolium*); common peduncle 5–8 mm long (*vs.* 12–23 mm long for *S. viridifolium*); pedicels and calyx densely to very densely stellate hairy (*vs.* glabrous or sparsely stellate-hairy); central ray of stellae deflexed (*vs.* erect) and style 7–8 mm long (*vs.* 4.5–5.5 mm for *S. viridifolium*).

There are two sheets of *S. dunalianum* at P that were collected by Charles Gaudichaud-Beaupré. The sheet with 5 leaves and the prickly stem, with the label saying "Solanum dunalianum, Aquartia Dl, Ile Pisang, C.G." is chosen as lectotype, as that specimen more closely matches the protologue.

I am uncertain about the correct application of the name *S. dunalianum*. The Australian species is perhaps referable to *S. torricellense* Bitter, but further taxonomic study is required.

Conservation status: Currently listed as "Vulnerable" under the Queensland Nature Conservation Act, 1992. *S. dunalianum* is known from only 3 locations, none of which is in a conservation reserve. Applying the IUCN criteria (IUCN. 2001), the existing category of "Vulnerable" is endorsed (VU C1).

2. Solanum viridifolium Dunal in A.DC., Prodr. 13(1): 73 (1852). **Type:** [Queensland. Cook District:] near Cape Grafton, 9 June 1770, *J. Banks & D. Solander* (holo: BM).

S. viride R.Br., Prodr. 445 (1810), *nom. illeg., non* G.Forst. ex Spreng. (1807).

***Illustration*:** Symon (1981: 123), as *S. viride*

Erect, rhizomatous perennial shrub, 1.5–9 m high. Juvenile branchlets with 0–10 prickles per dm, 1–3 mm long; leaves (in outline) ovate, entire; lamina 9–14 cm long, 4–6 cm wide, without prickles on upper surface. Adult branchlets brown or green; prickles absent (but large stems prickly); stellae absent; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 5–18.5 cm long, 2–6.5 cm wide, 2.1–2.9 times longer than broad, apex acute or acuminate, base cuneate, oblique part 0–8 mm long, obliqueness index 0–4 percent; petioles 1.2–3.8 cm long, 15–30% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles absent; stellae absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose or 2–3-branched, common peduncle 12–23 mm long, rachis prickles absent; 12–60-flowered, with all flowers bisexual and 4 or 5-merous; pedicels 5–13 mm long at anthesis, markedly thicker distally, 0.4–0.7 mm thick at mid-point, prickles absent. Calyx tube 1–2 mm long, lobes elliptic or deltate, 0.5–1.5 mm long; prickles absent at anthesis; stellae sparse, white, 0.2–0.3 mm across, sessile, lateral rays 4–8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white, mauve or purple, 6–11 mm long, deeply lobed, inner surface sparsely to densely stellate-hairy; anthers 3.5–5 mm long; ovary with Type 2 hairs only; functional style 4.5–5.5 mm long, erect, glabrous or with stellate and Type 2 hairs, stellae *c.* 0.3 mm across, lateral rays 4–6, central ray 1.5–2 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 3–13 per inflorescence, globular, 5.5–7.5 mm diameter, red, 1-locular (septum absent or incomplete); placenta not

apparent; mesocarp juicy, succulent; exocarp 0.1–0.3 mm thick; pedicels 11–17 mm long in fruit, 0.6–0.8 mm thick at mid-point; seeds pale yellow, 2–3 mm long.

***Specimens examined*: New Guinea.** Sabi, lower Wassi Kussa River, Jun 1973, *Henty* NGF 49646 (A, BRI, CANB, L); near Kunini village, Daru district, May 1986, *Simaga* 768 (CANB). **Queensland.** Cook District: Boolally, Upper Barron R., Jun 1899, *J.F. Bailey s.n.* (BRI); S.F.185 Danbulla, Sep 1929, *Doggrell* A12 (BRI); Mt Spurgeon, Sep 1936, *White* 10719 (BRI); Etty Bay, Dec 1941, *White* 11734 (BRI); Brown's Creek, Pascoe River, Jul 1948, *Brass* 19589 (BRI, CANB); Hammond Island, Jul 1974, *Heatwole* 303 (BRI); Halloran's Hill, Atherton, Aug 1975, *Stocker* 1420 (BRI, QRS); T.R.14, McIlwraith Range–Leo Ck road, Sep 1975, *Hyland* 8431 (BRI, CANB, QRS); Thursday Island, May 1977, *Paton* 10 (CANB); S.F.194, Baldy Mountain S.F., Oct 1987, *Foreman* 1649 (AD, BRI, CANB, NSW, QRS); Garraway Hill, 12° 42'S 143° 08'E, Jul 1993, *Forster* PIF13540 & *Tucker* (AD, BRI, MEL, QRS); Mt Misery, S of Cooktown, Sep 2000, *McDonald* KRM593 & *Hines* (BRI). North Kennedy District: Dunk Island, undated, *Banfield s.n.* (BRI); S bank of Tully River, Feb 1965, *Everist* 7795 (BRI); Edmund Kennedy N.P., near Cardwell, Dec 1991, *Bean* 3858 (AD, BRI); Kirrama Range, 18.5 km from Kennedy, Dec 1993, *Forster* PIF14314 (BRI). South Kennedy District: Mackay, Oct 1887, *Griffith s.n.* (BRI); S.F.. 652 Cauley, Jul 1974, *Hyland* 7382 (CANB); Mt Blackwood, Mar 1987, *Thompson* 80 (BRI); Crediton S.F., S of Eungella N.P., Nov 1990, *Bean* 2545 (BRI). Port Curtis District: Bobby Range road, S.F.67 Bulburin, E of Builyan, Mar 1995, *Bean* 8444 (BRI).

***Distribution and habitat*:** *Solanum viridifolium* is distributed along the coast of Queensland, north from about Monto (**Map 1**). It also extends to southern New Guinea. It inhabits notophyll rainforests in high rainfall areas, especially at altitudes above 300 metres, but also on the lowlands. A very common and widespread species.

***Phenology*:** Flowers and fruits may be found at any time of the year.

***Notes*:** Young plants of *S. viridifolium* are frequently monopodial until about 1.5 metres in height. Adult plants sometimes have short broad-based prickles on the large stems, although the flowering branchlets are invariably unarmed. One specimen label (*Gray* 2156) records a plant 9 metres high and 15 cm diameter at breast height. This is the tallest recorded *Solanum* in Australia.

Robert Brown collected this species on or near Curtis Island (near Gladstone) in 1802. It has never been recorded near Gladstone since then.

***Conservation status*:** Widespread. Not considered at risk.

Group 9A (S. densevestitum group), here defined; related to Group 9 (*S. jubae* group) of Whalen (1984).

Calyx lobes elliptical, exceeding mature fruits (100%); large stems without prickles (100%); branchlet prickles absent (100%); calyx prickles absent (100%); corolla inner surface glabrous (100%); mature fruits red, juicy, succulent, 1-locular, <9 mm diameter, exocarp <0.5 mm thick (100%); seeds pale yellow, 2–3 mm long (100%); adult leaves entire (93%); inflorescence with all flowers bisexual (93%); inflorescence solitary or pseudo-umbellate (71%); upper leaf surface stellae with central ray 2–9 times as long as laterals (71%).

7 species endemic to Australia; 7 species occurring in Queensland.

Solanum densevestitum and its allies form a very distinctive group. They appear to be closely related to Whalen's Group 9, the African *Solanum jubae* group, because of "the absence of prickles, stellae with long central rays, umbel-like inflorescence, ovate or obovate calyx lobes, and the succulent red fruits" (Whalen 1984: 227–8).

3. Solanum hapalum A.R.Bean **sp. nov.** Frutex usque ad 1 m altus, aculeis carens; folia integra, ovata, indumento coacto; stellae sessiles, radio centrali longo, in pagina inferiore folii 0.4–0.5 mm diametro; fructus globulares succosi et laete rubri maturitate; lobi calycis elliptici, fructus superantes. **Typus:** New South Wales. North Coast: 2.3 km along Dingo Range road, Clouds Creek State Forest, north of Dorrigo, 9 September 2000, *A.R. Bean* 16862 (holo: BRI (1 sheet + spirit); iso: MEL, NE, NSW)

***Illustration*:** Symon (1981: 143), as *S. densevestitum*.

Erect, rhizomatous perennial shrub, 0.5–1 m high. Juvenile branchlets without prickles; entire or shallowly-lobed. Adult stem prickles absent. Adult branchlets yellow or brown; prickles absent; stellae very dense, 0.3–0.4 mm

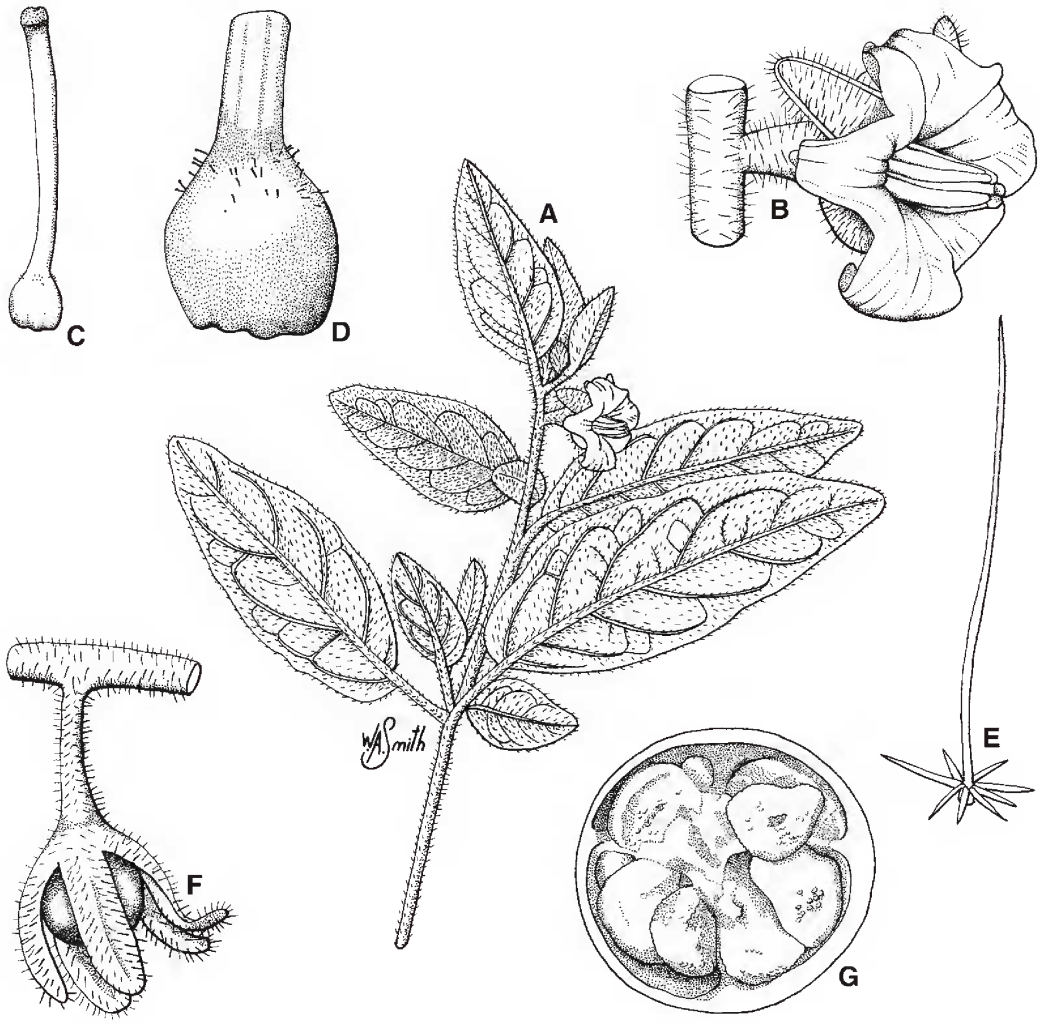

Fig. 13. ***Solanum hapalum***. A. flowering branchlet × 1. B. flower × 3. C. style and ovary × 6. D. ovary showing Type 2 hairs × 20. E. stellate hair from upper leaf surface × 60. F. mature fruit × 2. G. transverse section of fruit × 6. all from *Bean* 16854.

diameter, stalks 0–0.1 mm long; lateral rays 7 or 8, porrect; central ray 3–7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 4.5–7 cm long, 2.3–3.5 cm wide, 1.9–2.5 times longer than broad, apex obtuse or acute, base obtuse or cordate, oblique part 1–4 mm long, obliqueness index 2–6 percent; petioles 0.8–1.7 cm long, 17–25% length of lamina, prickles absent. *Upper leaf surface* grey-green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae density moderate to dense, 0.15–0.3 mm apart, 0.25–0.4 mm across, sessile; lateral rays 6–8, porrect; central ray 4–9 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae dense to very dense, 0.1–0.2 mm apart, 0.4–0.5 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 3–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle absent; 1–3-flowered, with all flowers bisexual and 5-merous; pedicels 2–7 mm long at anthesis, same thickness throughout, 0.6–0.7 mm thick at mid-point, prickles absent. Calyx tube 1–1.5 mm long, lobes elliptic, 4.5–8 mm long; prickles

absent at anthesis; stellae very dense, transparent, 0.3–0.5 mm across, stalks 0–0.1 mm long, lateral rays 7 or 8, central ray 3–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 7–12 mm long, shallowly lobed, inner surface glabrous; anthers 4–5 mm long; ovary with Type 2 hairs only; functional style 5–8 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes exceeding mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 5–6.5 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.2–0.4 mm thick; pedicels 8–11 mm long in fruit, 0.7–1 mm thick at mid-point; seeds pale yellow, 2.2–2.5 mm long. **Fig. 13.**

***Specimens examined*: Queensland.** Moreton District: Mt Lindesay, Oct 1921, *White* 1121 (BRI); Border road 4 km S of the sawmill on Burnett Ck, close to N.S.W. border, Apr 1973, *Sharpe* 447 (BRI); Mt Barney, south slopes, Oct 1992, *Forster* 11857 *et al.* (AD, BRI). **New South Wales.** Northern Tablelands: 30 miles [48 km] NE of Glen Innes, Gibraltar S.F., Apr 1956, *Constable* (NSW); Gibraltar Range N.P., 68 km E of Glen Innes, Oct 1969, *Coveny* 2243a (NSW); Surface Hill, ESE of Tenterfield, Jan 1975, *Moriarty* 1640 (BRI, CANB). North Coast: F.R. 121 Raleigh, Bellinger R., Apr 1910, *Swain* 157 (NSW); Coffs Harbour, Jun 1911, *Boorman* (BRI, NSW); Taree, Apr 1951, *Noonan* (NSW); 3 miles [5 km] W of Drake, Girard S.F., Apr 1956, *Constable s.n.* (NSW); North Obelisk, 2 km SW of Urbenville, Dec 1977, *Haegi* 1539 (BRI, NSW); 0.4 km W along Dennis Road, Ingalba S.F., 27 km NW of Kempsey, Dec 1998, *Lepschi* 4021 & *Connors* (CANB, NSW); Forbes Forest road, NW of Wauchope, Nov 1999, *Bean* 15702 (BRI, NSW); Welsh's Road, Clouds Creek S.F., N of Dorrigo, Sep 2000, *Bean* 16854 (BRI, NSW); Blacksmiths Shop road, Dalmorton S.F., SW of Grafton, Jan 2001, *Bean* 17252 (BRI). South Coast: Long Beach, Batemans Bay, Apr 1990, *Hancock* (AD, CANB, NSW); Blairs Road, Square Head, Batemans Bay, Jan 1995, *Rees* 300 (CANB); Eurobodalla Regional Botanic Gardens, Dec 1999, *Booth* 2511 (AD, BRI, NSW). **Cultivated:** Waite Institute ex Little Smoky, N.S.W., Dec 1967, *Symon* 4701 (AD, BRI, NSW).

***Distribution and habitat*:** *Solanum hapalum* extends from the extreme south-east of Queensland (Mt Barney, Mt Ballow, Mt Lindesay) to around Port Macquarie in New South Wales (**Map 1**), and with a disjunct occurrence near Batemans Bay. It grows on rainforest margins or in "wet sclerophyll" eucalypt forest, preferring disturbed areas such as roadsides or recently logged sites.

***Phenology*:** Flowers and fruits are recorded for most months of the year.

***Notes*:** *S. hapalum* is related to *S. densevestitum*, but differing by the smaller stellate hairs on all plant parts, the stellate hairs sessile on the lower leaf surface (stalks up to 0.5 mm long for *S. densevestitum*), the branchlet stellate hairs sessile or almost so, and with 7 or 8 lateral rays (stalks conspicuous, to 2 mm long, and with 4–6 lateral rays for *S. densevestitum*) and the ovary with Type 2 hairs only (Type 2 hairs and stellate hairs for *S. densevestitum*).

***Conservation status*:** Widespread. Not considered at risk.

***Etymology*:** from the Latin *hapalus*, meaning 'soft to the touch', in reference to the soft, felty leaves and stems.

4. Solanum johnsonianum A.R.Bean **sp. nov.**
Subfrutex usque ad 0.25 m altus, aculeis carens; folia integra late ovata, indumento coacto; stellae sessiles, radio centrali longo, in pagina superiore folii 0.25–0.35 mm diametro; fructus globulares, 5.5–8 mm diametro, succosi et laete rubri maturitate; lobi calycis elliptici, fructus superantes. **Typus:** Queensland. Leichhardt District: "Nirvana", *c.* 15 km WNW of Banana, 18 April 2003, *A.R. Bean* 20165 (holo: BRI (1 sheet + spirit); iso: CANB, MEL, NSW, *distribuendi*).

Erect, rhizomatous perennial shrub, 0.15–0.3 m high. Juvenile branchlets without prickles; leaves (in outline) broadly ovate, shallowly-lobed, with 2 pairs of lobes; lamina 4.5–5.5 cm long, 3.3–3.8 cm wide, without prickles on upper surface. Adult stem prickles absent. Adult branchlets grey to rusty or brown; prickles absent; stellae very dense, 0.4–0.5 mm diameter, sessile; lateral rays 7–9, porrect; central ray 3–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* broadly ovate, entire; lamina 2.5–6 cm long, 1.3–4.3 cm wide, 1.4–2 times longer than broad, apex obtuse, base obtuse or cordate, oblique part 0–1 mm long, obliqueness index 0–3 percent; petioles 0.9–2.8 cm long, 30–55% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs distributed throughout; protostellae present; ordinary stellae dense, 0.15–0.25 mm apart, 0.25–0.35 mm across,

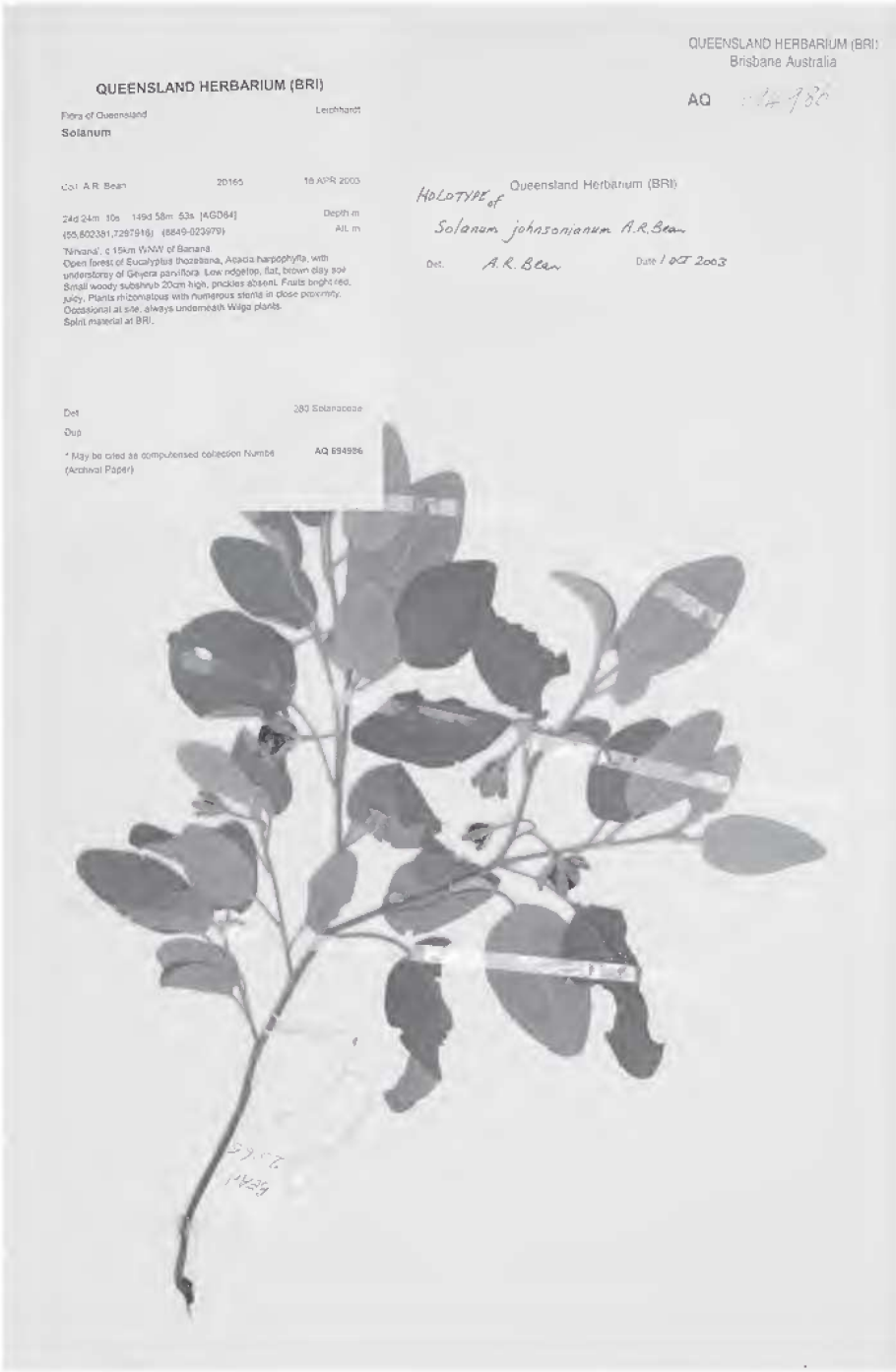

Fig. 14. Holotype of ***Solanum johnsonianum***.

sessile; lateral rays 7–9, porrect; central ray 3–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* greenish-white or white; prickles absent; stellae dense to very dense, 0.1–0.2 mm apart, 0.3–0.6 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 2–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 0–2 mm long, rachis prickles absent; 1 or 2-flowered, with all flowers bisexual and 5-merous; pedicels 4–7 mm long at anthesis, same thickness throughout, *c.* 0.7 mm thick at mid-point, prickles absent. Calyx tube 1–3 mm long, lobes elliptic, 4–6.5 mm long; prickles absent at anthesis; stellae very dense, yellow, 0.3–0.4 mm across, sessile, lateral rays 7 or 8, central ray 3–5 times as long as laterals, not gland-tipped or gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 6–11 mm long, rotate or shallowly lobed, inner surface glabrous; anthers 3–4 mm long; ovary glabrous, or with Type 2 hairs only; functional style 5–6.5 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes exceeding mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 5.5–8 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.3–0.5 mm thick; pedicels 10–16 mm long in fruit, 0.8–0.9 mm thick at mid-point; seeds pale yellow, 2.2–2.8 mm long. **Fig. 14.**

***Specimens examined*: Queensland.** Leichhardt District: 'Cottenham', *c.* 10 miles [16 km] NW of Banana, May 1960, *Johnson* 1708, 1709 (BRI); 'The Rhyddings', *c.* 38 km SW of Moura, Aug 1962, *Johnson* 2473 (BRI); site of Brigalow Research Station, 20 miles [32 km] NW of Theodore, Apr 1963, *Johnson* 2621 (BRI, CANB); *c.* 4 miles [6 km] E of Moura, Mar 1967, *Henderson* 223 (BRI). Port Curtis District: Orange Creek, *c.* 20 miles [32 km] NW of Biloela, Jun 1959, *Johnson* 854 (BRI); 1.6 km along Hibbs Road, N of Jambin, Apr 2003, *Bean* 20225 (BRI).

***Distribution and habitat*:** *Solanum johnsonianum* is endemic to Queensland. It extends from north-west of Theodore to north of Biloela (**Map 3**), a distance of around 100 kilometres. All specimens were found in communities dominated or co-dominated by *Acacia harpophylla* (Brigalow), on heavy cracking clay soils. In some cases, the specimen labels say "recently burnt" or "recently cleared Brigalow scrub".

***Phenology*:** Flowers recorded for March, May, June and August; mature fruits recorded for April and May.

***Notes*:** *S. johnsonianum* is distinguished from *S. nemophilum* by the branchlet stellae with a central ray 3–5 times longer than the lateral rays (0.7–1.2 times for *S. nemophilum*), central ray similarly much longer on other plant parts, stellae 0.25–0.35 mm diameter on upper leaf surface (0.4–0.7 mm for *S. nemophilum*), upper leaf surface lacking Type 2 hairs and stellae without stalks (Type 2 hairs present, stellae stalks 0.1–0.3 mm long for *S. nemophilum*). *S. johnsonianum* is also closely related to *S. innoxium*. It differs from the latter by the broader leaves (1.4–2 times longer than wide), the longer petioles (9–28 mm long), the greater petiole/lamina ratio (30–55%), the larger stellae on the lower leaf surface (0.3–0.6 mm diameter) and the calyx stellae with the central ray often gland-tipped.

***Conservation status*:** *Solanum johnsonianum* can no longer be found at most of the localities cited above. It is currently known from 3 locations, including the Brigalow Research Station, where the species is under threat from abnormally intensive grazing by wallabies. The other two populations are threatened by weeds (pasture grasses) and land clearance. No population is protected within a conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Endangered" is recommended (EN A3c; B1ab(iii,v)+2ab(iii,iv,v); C1).

***Etymology*:** Named for Robert W. Johnson, former Director of the Queensland Herbarium, and an assiduous collector of solanums, including almost all the specimens of this species.

5. Solanum innoxium A.R.Bean **sp. nov.** Frutex usque ad 0.6 m altus, aculeis carens; folia integra, lanceolata, indumento coacto; stellae sessiles, radio centrali radiis lateralibus 3–5plo longiore, in pagina superiore folii 0.2–0.25 mm diametro; fructus ellipsoidales, 3–4.5 mm diametro, succosi et laete rubri maturitate; calycis lobi elliptici, fructus superantes. **Typus:** Queensland. Maranoa District: slopes of

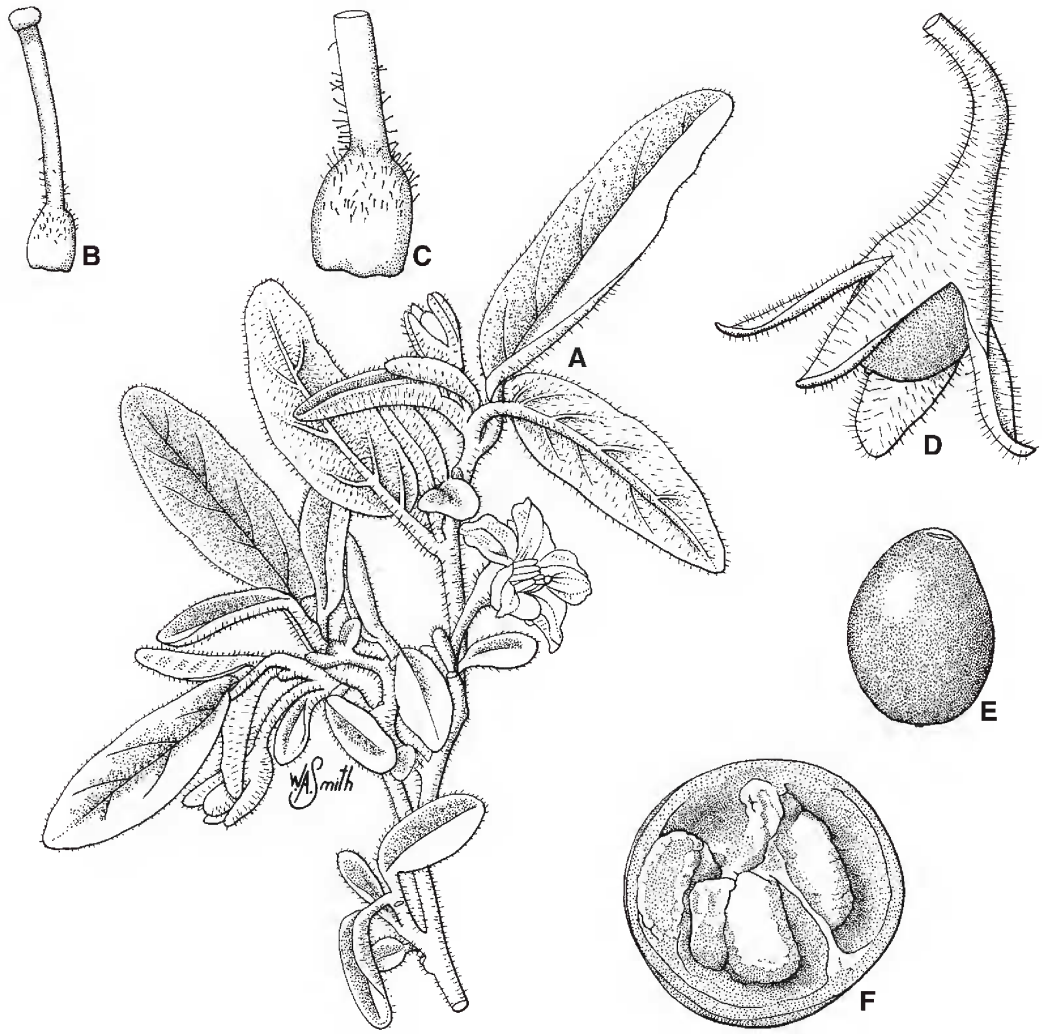

Fig. 15. ***Solanum innoxium***. A. flowering branchlet × 1.5. B. style and ovary × 6. D. ovary showing Type 2 hairs × 12. D. mature fruit still attached × 4. E. mature fruit, detached × 5. F. transverse section of fruit × 8. A, *Pedley* 792; B–C, *Bean* 17775; D–F, *Bean* 18367.

Thomby Range, 'Glen Fosslyn', SE of Surat, 31 August 2001, *A.R. Bean* 17775 (holo: BRI (1 sheet + spirit); iso: MEL, NSW).

Erect, rhizomatous perennial shrub, 0.3–0.6 m high. Leaves (in outline) lanceolate, entire; without prickles on upper surface. Adult stem prickles absent. Adult branchlets yellow or brown; prickles absent; stellae very dense, 0.25–0.4 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 3–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate or ovate, entire; lamina 2.5–7 cm long, 0.8–2 cm wide, 2.6–4.2 times longer than broad, apex obtuse or acute, base obtuse or cordate, oblique part 0–2 mm long, obliqueness index 0–5 percent; petioles 0.4–0.8 cm long, 11–19% length of lamina, prickles absent. *Upper leaf surface* grey-green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae density moderate to dense, 0.1–0.15 mm apart, 0.2–0.3 mm across, sessile; lateral rays 7 or 8, porrect; central ray 3–6 times as long as laterals, not gland-tipped;

finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae very dense, 0.05–0.1 mm apart, 0.25–0.4 mm diameter, stalks 0–0.1 mm long; lateral rays 7 or 8, porrect; central ray 3–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle absent; 1 or 2-flowered, with all flowers bisexual and 4 or 5-merous; pedicels 5–11 mm long at anthesis, same thickness throughout, 0.7–0.8 mm thick at mid-point, prickles absent. Calyx tube 1–1.5 mm long, lobes elliptic, 4–5.5 mm long; prickles absent at anthesis; stellae very dense, transparent, 0.25–0.4 mm across, sessile, lateral rays 7 or 8, central ray 2.5–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 7–9 mm long, deeply lobed, inner surface glabrous; anthers 3–4.5 mm long; ovary with Type 2 hairs only, or with stellate and Type 2 hairs; functional style 4–5 mm long, erect, glabrous or with stellate and Type 2 hairs, stellae 0.2–0.25 mm across, lateral rays 7 or 8, central ray *c.* 1 times as long as laterals. *Fruiting calyx* with lobes exceeding mature fruit, prickles absent. Mature fruits 1 per inflorescence, ellipsoidal, 3–4.5 mm diameter, red, with a few scattered Type 2 hairs, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.2–0.3 mm thick; pedicels 7–11 mm long in fruit, 0.7–0.8 mm thick at mid-point; seeds pale yellow, 2.2–2.3 mm long. **Fig. 15.**

***Specimens examined*: Queensland.** Maranoa District: E of Combididan Farm, 'Cypress Downs' [NE of Yuleba], Sep 1961, *Jones* 166 (BRI); 'Boxleigh', S of Surat, Aug 2001, *Bean* 17762 (BRI, MEL, NSW); Thomby Range, SW of Glenmorgan, Jan 2002, *Bean* 18367 (BRI); 'Silver Springs', S of Surat, Jan 2002, *Bean* 18374 (BRI). Darling Downs District: 'Calala', *c.* 10 miles [16 km] E of Meandarra, Jun 1960, *Johnson* 1620A (BRI); 'Woodlands', 5 miles [8 km] SW of Westmar, Jul 1961, *Pedley* 792 (BRI, CANB); Hannaford, 42 km W of Tara, Apr 1963, *T.J. McDonald* 63 (BRI, CANB).

***Distribution and habitat*:** *Solanum innoxium* is endemic to Queensland, where it extends from near Yuleba to Westmar (**Map 3**). Habitat varies from ridges dominated by Lancewood (*Acacia shirleyi*) or Bendee (*Acacia catenulata*), to *Eucalyptus populnea* woodland, and one record from an *Acacia harpophylla* community. Soils also vary from shallow stony loams, to red-brown clay loams, or heavy grey clays.

***Phenology*:** Flowers are recorded for January, and from June to September; mature fruits recorded for January and April.

***Notes*:** *S. innoxium* is allied to *S. nemophilum* but differs by the lanceolate leaves, the stellae of the upper leaf surface 0.2–0.3 mm diameter (0.4–0.7 mm for *S. nemophilum*), the branchlet stellae with the central ray 3–4 times longer than the lateral rays (0.7–1.2 times for *S. nemophilum*), the stellae on the lower leaf surface sessile or with stalks to 0.1 mm long (stalks 0.2–0.4 mm for *S. nemophilum*), style 4–5 mm long (5.5–8 mm long for *S. nemophilum*) and the ellipsoidal fruits (globular for *S. nemophilum*). *S. innoxium* differs from *S. hapalum* by the shorter and narrower leaves, shorter petioles, smaller stellae on the lower leaf surface, shorter style, the relatively long Type 2 hairs on the ovary, and the ellipsoidal fruits.

***Conservation status*:** *Solanum innoxium* is currently known from 3 locations. It does not occur in a conservation reserve. It is threatened by land clearance and weeds. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU A3ce; C1).

***Etymology*:** From the Latin *innoxius*, meaning 'harmless'. This is in reference to the lack of prickles on plants of this species.

6. Solanum ultimum A.R.Bean **sp. nov.** Frutex usque ad 0.6 m altus, aculeis carens; folia integra, ovata; stellae sessiles, radio centrali radiis lateralibus 0.4–1plo longiore, in pagina inferiore folii 0.4–0.6 mm diametro, in pagina superiore folii indumento absente usque ad moderate denso; fructus globulares, 6–9 mm diametro, succosi et laete rubri maturitate; calycis lobi elliptici, fructus superantes. **Typus:** Queensland. Burke District: 3 km by road south then west of 'Warang' homestead site, White Mountains National Park, 11 April 2000, *M.B. Thomas* 1572 & *E.J. Thompson* (holo: BRI; iso: DNA, NSW).

Fig. 16. ***Solanum ultimum***. A. flowering branchlet × 1. B. style and ovary × 6. C. ovary showing Type 2 hairs × 20. D. stellate hair from upper leaf surface × 60. E. mature fruit × 2. all from *Cottam* AZI 1520.

Solanum nemophilum var. *brachycarpum* Domin, Biblioth. Bot. 89: 585 (1929). **Type:** Queensland. North Kennedy District: near Pentland, March 1910, *K. Domin* (holo: PR).

Erect, rhizomatous perennial shrub, 0.3–0.6 m high. Juvenile stage unknown. Adult stem prickles absent. Adult branchlets white, grey or yellow; prickles absent; stellae very dense, 0.6–0.9 mm diameter, stalks 0–0.1 mm long; lateral rays 7–9, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate or ovate, entire; lamina 4–6 cm long, 1.1–2.3 cm wide, 2.7–3.6 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–1.5 mm long, obliqueness index 0–2 percent; petioles 0.7–1.4 cm long, 16–23% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs confined to midrib, or distributed throughout; protostellae present; ordinary stellae very sparse to sparse, 0.4–4 mm apart, 0.25–0.4 mm across, sessile; lateral rays 7 or 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white; prickles absent; stellae dense to very dense, 0.1–0.2 mm apart, 0.4–0.6 mm diameter, stalks 0–0.1 mm long; lateral rays 8–9, porrect; central ray 0.2–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle absent; 1–3-flowered, with all flowers bisexual and 4 or 5-merous; pedicels 5–9 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.9–1 mm thick at mid-point, prickles absent. Calyx tube 0.5–1.5 mm long, lobes elliptic, 4–6 mm long; prickles absent at anthesis; stellae dense to very dense, white, 0.4–0.5 mm across, stalks 0–0.1 mm long, lateral rays 8–9, central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–9 mm long, shallowly lobed, inner surface glabrous; anthers 3.5–4.5 mm long; ovary with Type 2 hairs only; functional style 5.5–7 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes exceeding mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 6–9 mm diameter, red; mesocarp juicy, succulent; pedicels 7–12 mm long in fruit, 1.5–1.9 mm thick at mid-point; seeds pale yellow, 2.4–2.7 mm long. **Fig. 16.**

***Specimens examined*: Queensland.** Burke District: White Mountains N.P., near 'Warang', Mar 2000, *Wannan* 1624 (BRI, NSW); 0.5 km W of 'Warang' HS site, White Mountains N.P., Apr 2000, *Thomas* 1803 & *Thompson* (BRI). Mitchell District: 'Narbethong' SE of Barcaldine, Jun 1997, *Cottam* AZI1517 (BRI); 'Narbethong', SE of Barcaldine, Dec 1997, *Milson* AZI1537 (BRI).

***Distribution and habitat*:** *Solanum ultimum* is endemic to Queensland. It is known from the White Mountains National Park and from near Barcaldine (**Map 3**). It grows on red sandy soil with *Corymbia* sp., *Eucalyptus persistens* or *Melaleuca tamariscina*.

***Phenology*:** Flowers are recorded for April, June and December; mature fruits in April and December.

***Notes*:** *S. ultimum* differs from *S. nemophilum* by the indumentum of the upper leaf surface absent to sparse (indumentum moderately dense to dense for *S. nemophilum*), upper leaf surface with stellate hairs sessile and Type 2 hairs absent (stellate hairs with stalks 0.1–0.3 mm long and Type 2 hairs present for *S. nemophilum*), calyx stellate hairs with a central ray 0.4–0.8 times length of lateral rays (0.8–1.2 times for *S. nemophilum*), and the larger seeds.

S. ultimum differs from all other species in the *S. densevestitum* group by the upper leaf surface with the stellate indumentum absent or at most moderately dense, and by the stellae with a comparatively short central ray on all plant parts.

***Conservation status*:** Data deficient.

***Etymology*:** From the Latin *ultimus*, meaning 'most distant'. This refers to the geographical remoteness from the eastern Australian coast, where its relatives are located.

7. Solanum densevestitum F. Muell. ex Benth., Fl. Austral. 4: 456 (1868). **Type:** Queensland. 'Brisbane River', December 1856, *F. Mueller* (lecto: MEL [MEL12200]), *fide* Symon (1981).

Erect, rhizomatous perennial shrub, 0.4–0.9 m high. Juvenile branchlets without prickles; leaves (in outline) broadly ovate, shallowly-lobed, with 2–3 pairs of lobes; lamina *c.* 9 × 6 cm, without prickles on upper surface. Adult stem prickles absent. Adult branchlets grey; prickles absent; stellae dense to very dense, 0.7–1.5 mm diameter, stalks 0–2 mm long; lateral rays 4–6, porrect; central ray 1.5–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, entire; lamina 5–10 cm long, 2.6–5.5 cm wide, 1.6–2 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–5 mm long, obliqueness index 0–5 percent; petioles 0.9–3.4 cm long, 17–35% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs distributed throughout; protostellae present; ordinary stellae dense, 0.2–0.4 mm apart, 0.5–1.1 mm across, sessile; lateral rays 4–6, porrect; central ray 3–6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles absent; stellae dense, 0.1–0.3 mm apart, 0.7–1.6 mm diameter, stalks 0–0.5 mm long; lateral rays 4–8, porrect; central ray 2–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle 0–4 mm long; 1–3-flowered, with all flowers bisexual and 5-merous; pedicels 4–9 mm long at anthesis, same thickness throughout, 0.5–0.6 mm thick at mid-point, prickles absent. Calyx tube 1.5–2.5 mm long, lobes elliptic, 6–10 mm long; prickles absent at anthesis; stellae dense, transparent, 0.8–1.8 mm across, stalks 0–0.9 mm long, lateral rays 4 or 5, central ray 1.5–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 10–13 mm long, shallowly lobed, inner surface glabrous; anthers 4–5.5 mm long; ovary with stellate and Type 2 hairs; functional style 6–7.5 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes exceeding mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, *c.* 7 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; pedicels 9–12 mm long in fruit; seeds pale yellow, 2–2.2 mm long. *Felty Nightshade.*

***Selected specimens*: Queensland.** South Kennedy District: S of Massey Creek, Eungella N.P., Sep 1991, *Bean* 3682 (BRI); Eungella Range, Schumanns Road, *c.* 1.1 km E of Swampy Ridge, Jun 1995, *Pollock* 233 (BRI). Burnett District: 14 km ESE of Elgin Vale, Jan 1991, *Pedley* 5596 (BRI). Wide Bay District: Lagoon Pocket via Gympie, Aug 1930, *Lowe s.n.* (BRI); Elanda Point, near Lake Cootharaba, Jun 1986, *Sandercoe* C996 & Milne (BRI); S.F.639 Wrattens, Apr 1996, *Forster* 19136 & *Leiper* (AD, BRI); Booloumba Creek road, SW of Kenilworth, Aug 1999, *Bean* 15246 (BRI, NSW); S.F.256 Imbil, Mitchell L.A., Mar 2003, *Forster* PIF29294 *et al.* (BRI, MEL, NE, NSW). Moreton District: Enoggera, Mar 1912, *White s.n.* (BRI); Blackall Range, Dec 1918, *White s.n.* (BRI); near Samford, on House Mtn, Feb 1945, *Blake* 15506 (BRI); Bruce Hwy, Caboolture, Jun 1960, *Williamson s.n.* (BRI); Benarkin S.F. near Blackbutt, Jul 1974, *Moriarty* 1542 (BRI, CANB); Maiala Reserve, near Mt Glorious, Jun 1989, *Symon* 14881 (AD, BRI); Mt Perserverance S.F.757, Jul 1996, *Stephens* ESK28 & *Dowling* (BRI).

***Distribution and habitat*:** *Solanum densevestitum* is endemic to Queensland. From the north-western outskirts of Brisbane to Gympie and west to Gallangowan, plus a remarkable outlier at Eungella, west of Mackay (**Map 2**). It inhabits dense eucalypt forest with a shrubby understorey of rainforest species, often in areas that have been disturbed *e.g.* by roadworks.

***Phenology*:** Flowers are recorded for all months of the year; mature fruits are recorded between April and August.

***Notes*:** *Solanum densevestitum* differs from all other related species by the stellae on upper leaf surface being sessile, with only 4 or 5 (rarely 6) lateral rays; the long-stalked stellae of the branchlets (stalks up to 2.0 mm long); and the leaf lower surface green.

The collections cited by Bentham in the protologue belong to three species; *S. densevestitum* (as to lectotype), the recently named *S. stupefactum* Symon, and *S. hapalum* (described in this paper). The description given in the protologue was clearly derived from a combination of these taxa.

The isolectotype cited by Symon (1981) is a mixed specimen. There are three specimens on the sheet; the lowermost piece is *S. densevestitum*, as to lectotype; the upper two pieces are *S. stupefactum* Symon.

The locality of "Tweed River district" given for a collection by E. Betche in April 1896

(held at NSW) must be regarded with considerable suspicion, as there have been no subsequent collections from there or anywhere nearby.

Typical specimens of *S. densevestitum* and *S. nemophilum* are readily distinguished by the stellae of the upper leaf surface (stalk length and lateral ray number). However, collections from the Benarkin – Yarraman area appear to be morphologically intermediate and difficult to assign to either species.

Juvenile leaves of *S. densevestitum* are frequently lobed, in a similar fashion to adult leaves of *S. gympiense*.

Conservation status: Moderately widespread. Not considered at risk.

8. Solanum nemophilum F.Muell., Fragm. 2: 161 (1861); *S. nemophilum* var. *nemophilum* Domin, Biblioth. Bot. 89: 584 (1929); *S. nemophilum* var. *typicum* Domin, Biblioth. Bot. 89: 584 (1929), *nom. inval.* **Type:** [Queensland. LEICHHARDT DISTRICT:] 'between Mackenzie and Dawson Rivers', November 1856, *F. Mueller* (lecto: MEL; isolecto: K, photo seen).

Erect, rhizomatous perennial shrub, 0.3–0.6 m high. Juvenile branchlets with 0–5 prickles per dm, 2–3 mm long; leaves (in outline) ovate, entire; lamina *c.* 4 × 2 cm, with 0–4 prickles on upper surface. Adult stem prickles absent. Adult branchlets white or grey; prickles absent; stellae very dense, 0.3–1 mm diameter, stalks 0–0.6 mm long; lateral rays 7 or 8, porrect; central ray 0.7–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 2.5–7 cm long, 1.2–2.8 cm wide, 1.8–3 times longer than broad, apex obtuse or acute, base obtuse or cordate, oblique part 0–3 mm long, obliqueness index 0–5 percent; petioles 0.4–1.4 cm long, 15–35% length of lamina, prickles absent. *Upper leaf surface* grey-green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense, 0.1–0.3 mm apart, 0.4–0.7 mm across, stalks 0.1–0.3 mm long; lateral rays 7 or 8, porrect; central ray 0.7–1.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green or yellowish; prickles absent; stellae dense to very dense, 0.05–0.15 mm apart, 0.5–0.7 mm diameter, stalks 0.2–0.4 mm long; lateral rays 7 or 8, porrect; central ray 0.5–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-umbellate, common peduncle 0–3 mm long; 3–5-flowered, with all flowers bisexual and 4 or 5-merous; pedicels 4–7 mm long at anthesis, same thickness throughout, 0.9–1 mm thick at mid-point, prickles absent. Calyx tube 1–2 mm long, lobes elliptic, 2.5–7 mm long; prickles absent at anthesis; stellae very dense, white, 0.4–1 mm across, stalks 0–0.25 mm long, lateral rays 7 or 8, central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–10 mm long, rotate or shallowly lobed, inner surface glabrous; anthers 3–4 mm long; ovary with Type 2 hairs only; functional style 5.5–8 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes exceeding mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 4.5–9 mm diameter, red, glabrous or with a few scattered Type 2 hairs, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.2–0.25 mm thick; pedicels 6–11 mm long in fruit, 0.8–1.2 mm thick at mid-point; seeds pale yellow, 2–2.3 mm long.

***Selected specimens examined*: Queensland.** LEICHHARDT DISTRICT: Duaringa, Mar 1909, *Maiden* (NSW); Blackdown Tableland, *c.* 35 km SE of Blackwater, Sep 1971, *Henderson* H1094 *et al.* (BRI, CANB); top of Carnarvon Range, N of Injune, Sep 2003, *Bean* 20760 (BRI). PORT CURTIS DISTRICT: S.F.69 Dawes Range, SE of Biloela, Dec 1999, *Bean* 15933 (BRI). BURNETT DISTRICT: *c.* 14 km NNE of Eidsvold, Oct 1993, *Lepschi & Slee* 1215 (AD, BRI, CANB); *c.* 9.2 km NE of Durong on slopes above Hardy Creek, Jul 1998, *Pollock* ABP715 & *Dean* (BRI); Schellbachs road, Kingaroy, Mar 1999, *Haskard* 17 (AD, BRI); Hurdle Gully road, Coominglah S.F., W of Monto, Jan 2000, *Bean* 15934 (BRI). DARLING DOWNS DISTRICT: 6 miles [10 km] S of Warwick on Stanthorpe road, Nov 1946, *Everist & Webb* 1258 (BRI); 25 miles [40 km] WNW of Dalby on road to Kogan, Oct 1969, *Everist s.n.* (BRI); Amiens, 10 miles [16 km] NW of Stanthorpe, Jul 1974, *Swan* 71 (BRI); Centenary road, W of Goombungee, May 1997, *Bean* 12000 (BRI); S.F.197 Diamondy, 32 km NE of Jandowae, Mar 1999, *Forster* PIF24090 & *Booth* (AD, BRI, MEL); Bony Mountain, 14 km SW of Allora, Aug 1999, *Bean* 15259 (BRI); Wondul Range N.P., SW of Milmerran, Nov 1999, *Bean* 15888 (BRI). MORETON DISTRICT: Tarampa, undated, *Bailey* (BRI); Falls Creek, 4.5 km NW of West Haldon, May 1987, *Forster* 2940 & *Bird* (BRI); Scanlon scrub, Mount Berryman, 15 km SW of Laidley, Aug 1990, *Bird* (BRI); near High Camp, 11 km SE of Cooyar, Feb 2000, *Bean* 16048 (BRI).

***Distribution and habitat*:** *Solanum nemophilum* is endemic to Queensland. Widespread in subcoastal areas of Queensland from Duaringa to Boonah and Warwick, and west to Kogan and Miles (**Map 4**). It grows in shrubby eucalypt woodland in loamy soils.

***Phenology*:** Flowers and fruits may be borne at any time of the year.

***Notes*:** *S. nemophilum* is distinguished from other species of this group by the relatively long-stalked stellae on both leaf surfaces, and the stellae with a central ray more or less equal in length to the lateral rays.

A Scortechini specimen of *S. nemophilum* at BRI, reputedly from Roma, should be disregarded, as there have been no collections of this species from the Maranoa district over the last century.

***Conservation status*:** Widespread. Not considered at risk.

9. Solanum gympiense Symon, Austrobaileya 4: 433 (1995). **Type:** Queensland. Wide Bay District: Gundiah, 21 June 1927, *C.T. White* 3527 (holo: BRI).

Solanum sp. 2 in Ross (1986)

***Illustration*:** Symon (1995: 434)

Erect, rhizomatous perennial shrub, 0.2–0.5 m high. Leaves (in outline) broadly ovate, shallowly-lobed, with 3 or 4 pairs of lobes; lamina *c.* 6 × 4 cm, without prickles on upper surface. Adult stem prickles absent. Adult branchlets yellow or brown or green; prickles absent; stellae dense to very dense, 0.5–1 mm diameter, stalks 0–0.8 mm long; lateral rays 6–8, porrect or ascending; central ray 1–2 times as long as laterals, gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, entire or shallowly lobed throughout; lobes 3–5 on each side, obtuse, lobing index 1–1.2; lamina 4–10 cm long, 2.2–5.5 cm wide, 1.4–1.9 times longer than broad, apex obtuse or acute, base obtuse or cordate, oblique part 0–3 mm long, obliqueness index 0–4 percent; petioles 0.8–2.3 cm long, 17–30% length of lamina, prickles absent. *Upper leaf surface* green or grey-green; prickles absent; stellate hairs distributed throughout; protostellae present; ordinary stellae dense, 0.2–0.3 mm apart, 0.5–0.9 mm across, stalks 0–0.15 mm long; lateral rays 5–10, porrect or ascending; central ray 2–4 times as long as laterals, gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white; prickles absent; stellae dense to very dense, 0.1–0.25 mm apart, 0.8–1.3 mm diameter, stalks 0.1–0.5 mm long; lateral rays 5–11, porrect or ascending; central ray 0.8–2 times as long as laterals, gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 4–21 mm long, rachis prickles absent; 3–7-flowered, weakly andromonoecious or with all flowers bisexual and 4 or 5-merous; pedicels 7–12 mm long at anthesis, same thickness throughout, 0.7–1.2 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes elliptic, 2.5–9 mm long; prickles absent at anthesis; stellae very dense, transparent, 0.7–1 mm across, stalks 0–0.7 mm long, lateral rays 7 or 8, central ray 1–3 times as long as laterals, gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 11–15 mm long, deeply lobed, inner surface glabrous; anthers 4.5–6 mm long; ovary glabrous; functional style 6–11 mm long, erect, glabrous or with Type 2 hairs only or with stellate and Type 2 hairs, stellae *c.* 0.5 mm across, lateral rays *c.* 7, central ray *c.* 1.5 times as long as laterals. *Fruiting calyx* with lobes exceeding mature fruit, prickles absent. Mature fruits 1–4 per inflorescence, ellipsoidal, 4.5–7 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.2–0.3 mm thick; pedicels 7–15 mm long in fruit, 1.2–1.6 mm thick at mid-point; seeds pale yellow, 2.7–2.9 mm long.

***Specimens examined*: Queensland.** Leichhardt District: crest of Carnarvon Range, Mar 1960, *Johnson* 1451 (BRI). Port Curtis District: Rosedale, Mar 1931, *Dovey* K5 (BRI). Maranoa District: 'Claravale', May 1962, *Johnson* 2440 (BRI); The Tombs, Maranoa River, *c.* 110 km NW of Injune, Jun 1977, *Crisp* 3113 (AD, BRI, CANB); 1.5 km SW of 'Kilmorey' HS, May 1982, *Neldner & Thomas* 627, 633 (BRI). Wide Bay District: Woondum, Oct 1917, *Moore* (BRI); Gundiah, Jun 1927, *White* 3528 (BRI); *c.* 6 miles [10 km] NW of Tiaro, Apr 1959, *Ridley s.n.* (BRI); 8 km SSW of Howard, Jan 1987, *Forster* 2855 (AD, BRI); Clifton Range, S.F. 676, 11 km N of Brooweena, Apr 1992, *Forster* PIF9694 (BRI); Veteran S.F., N of Gympie, Oct 1993, *Bean* 6706 (BRI); S.F.832, Cordalba S.F., *c.* 19.5 km SE of Gin Gin, Nov 1995, *Sparshott* KMS660 (BRI); S.F.1294 Parish

of Doongul, *c.* 27 km S of Childers, May 1996, *Sparshott* KMS837 & *Shewell* (AD, BRI); *c.* 3 km SE of Fairlies Knob, Seaview Range, May 2000, *Phillips* 391 (BRI); S.F.940, 10 km SW of Bauple, Mar 2002, *Bean* 18555 (A, BRI, CANB, K, MEL, MO, PRE).

***Distribution and habitat*:** *Solanum gympiense* is endemic to Queensland where it extends along the coast from Woondum (near Gympie) to Rosedale (west of Bundaberg), with disjunct occurrences in the Carnarvon Range north of Injune (**Map 5**). It grows in shrubby eucalypt forest in sandy to loamy soil.

***Phenology*:** Flowers and fruits have been recorded for almost every month of the year.

***Notes*:** *S. gympiense* is distingushed from other species in the group by the stellae with gland-tipped central rays on most plant parts, and the adult leaves usually lobed.

***Conservation status*:** Widespread. Not considered at risk.

Group 13 (S. ferocissimum group) of Whalen (1984)

Perennial shrubs (100%); calyx and pedicel prickles absent, calyx lobes not elliptic (100%); large stems with prickles (100%); prickles acicular (100%); upper leaf surface green; fruits globular, red, juicy, 1-locular (100%); fruiting calyx less than half length of mature fruit (97%); inflorescence not branched (97%); corolla inner surface glabrous (93%); fruit exocarp <1 mm thick (93%); adult leaves entire or shallowly lobed (88%); fruits <12 mm diameter (80%); branchlet prickles present (77%); Type 2 hairs absent from branchlets (77%); average petiole length 12% of lamina length.

17 species endemic to Australia; 17 species occurring in Queensland.

10. Solanum fervens A.R.Bean **sp. nov.** Fructus erectus, aculeos aciculares sparse distributos gerens; folia integra vel non profunde lobata, lanceolata, supra glabra, subtus dense stellato-tomentosa; stellae radio centrali radiis lateralibus 3–6plo longiore; ovarium stellato-pubescens; exocarpium fructuum maturorum *c.* 0.8 mm crassum. **Typus:** Queensland. Cook District: eastern bank of Jardine River mouth, 1 September 1985, *J.R. Clarkson* 6219 (holo: BRI (1 sheet + spirit); iso: AD, MBA, QRS).

Solanum sp. (Bamaga V. Scarth-Johnson 1117) in Henderson (2002)

Erect, rhizomatous perennial shrub, 1–2 m high. Juvenile stage unknown. Adult branchlets yellow or brown; prickles 3–20 per decimetre, straight, acicular, 3–5 mm long, 13–16 times longer than wide; stellae dense to very dense, 0.3–0.4 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 2–6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate or ovate, entire or shallowly lobed throughout; lobes 3 or 4 on each side, obtuse, lobing index 1–1.2; lamina 7.5–14 cm long, 2–4.5 cm wide, 2.5–5.2 times longer than broad, apex acute, base cuneate, oblique part 0–4 mm long, obliqueness index 0–4 percent; petioles 0.4–0.8 cm long, 3–7% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* yellowish or rusty; prickles absent; stellae dense, 0.1–0.2 mm apart, 0.4–0.5 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 3–7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–3 mm long, rachis prickles absent; 7–20-flowered, with all flowers bisexual and 5-merous; pedicels 4–7 mm long at anthesis, same thickness throughout, 0.25–0.4 mm thick at mid-point, prickles absent. Calyx tube 1.5–2 mm long, lobes deltate, 0.5–1.2 mm long; prickles absent at anthesis; stellae dense to very dense, yellow or white, 0.2–0.3 mm across, sessile, lateral rays 5–7, central ray 2–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 5–7 mm long, deeply lobed, inner surface glabrous; anthers 3–4.5 mm long; ovary with stellate hairs only; functional style 5–7 mm long, erect, with stellate hairs only, stellae 0.2–0.4 mm across, lateral rays 5–7, central ray 0.5–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, globular, 9–12 mm diameter, red, 1-locular

Fig. 17. ***Solanum fervens***. A. flowering branchlet × 0.6. B. style and ovary × 6. C. ovary showing stellate hairs × 30. D. stellate hair from lower leaf surface × 60. E. mature fruit × 2. F. transverse section of fruit × 3. A–D, *Forster* 8968; E–F, *Clarkson* 6219.

(septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp *c.* 0.8 mm thick; pedicels 15–23 mm long in fruit, 0.5–0.8 mm thick at mid-point; seeds pale yellow, 3–3.5 mm long. **Fig. 17.**

***Specimens examined*: Queensland.** Cook District: N of Olive River, Cape York Peninsula, Sep 1974, *Webb & Tracey* 13480 (BRI, QRS); tributary of Escape River, Jun 1978, *Clarkson* 2086 (BRI); Red Island Point, Bamaga, Sep 1980, *Scarth-Johnson* 1117A (BRI); 3 km NW of Bolt Head, Temple Bay, Jul 1991, *Forster* PIF8968 (AD, BRI, DNA, QRS); 15 km N of Middle Peak road junction, Mar 1992, *Johnson* 5114 (BRI); 0.4 km west of Sach Waterhole, *c.* 14 km NNW of Ussher Point, Jul 1992, *Clarkson* 9679 & *Neldner* (AD, BRI, MBA); Bolt Head, Jun 1996, *Gray* 6842, 6875 (BRI, QRS).

***Distribution and habitat*:** *Solanum fervens* is endemic to Queensland. Confined to the Cape York Peninsula, from the Bamaga area to Bolt Head and Temple Bay (**Map 2**). It grows on siliceous sand dunes in semi-deciduous vine-forest.

***Phenology*:** Flowers have been recorded in March, June and July; mature fruits in March, June and September.

***Notes*:** *S. fervens* is closely related to *S. discolor*, but differs by the dense indumentum on the leaf underside (very dense for *S. discolor*), the stellate hairs of the calyx and leaf underside having a much longer central ray, the longer hypanthium, the stellate pubescent ovary (glabrous for *S. discolor*), and the exocarp *c.* 0.8 mm thick (0.4–0.5 mm thick for *S. discolor*).

***Conservation status*:** Not considered at risk.

***Etymology*:** From the Latin *fervens*, meaning "burning, boiling, hot". This is in reference to the high temperatures experienced by the species in the extreme north of Australia.

11. Solanum yirrkalense Symon, J. Adelaide Bot. Gard. 4: 137 (1981), as 'yirrkalensis'. **Type:** Northern Territory. Yirrkala Gardens, 27 February 1976, *D. Hinz* 7633 (holo: DNA ex NT; iso: BRI, CANB, DNA).

***Illustration*:** Symon (1981: 139)

Erect, rhizomatous perennial shrub, 0.5–1.5 m high. Juvenile stage unknown. Adult branchlets brown; prickles 3–10 per decimetre, straight, acicular, 1–5 mm long, 10–15 times longer than wide; stellae sparse to dense, 0.2–0.3 mm diameter, stalks 0–0.1 mm long; lateral rays 8–13, porrect or multiradiate; central ray absent or present, 0–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire or shallowly lobed throughout; lobes 3–5 on each side, acute or obtuse, lobing index 1–1.4; lamina 7.5–13 cm long, 3.5–6 cm wide, 2–3 times longer than broad, apex acute or acuminate, base cuneate, oblique part 0–3 mm long, obliqueness index 0–2 percent; petioles 0.5–2.2 cm long, 5–17% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–7, straight, acicular, 3–5 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* greenish-white; prickles absent; stellae dense, 0.1–0.3 mm apart, 0.3–0.5 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.1–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, pseudo-racemose, common peduncle 3–12 mm long, rachis prickles absent; 5–35-flowered, weakly andromonoecious, flowers 5-merous; pedicels 6–10 mm long at anthesis, same thickness throughout, 0.3–0.4 mm thick at mid-point, prickles absent. Calyx tube 1.5–2.5 mm long, lobes deltate or attenuate, 1–3 mm long; prickles absent at anthesis; stellae moderate to dense, transparent, 0.2–0.3 mm across, sessile, lateral rays 5–8, central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white or mauve, 6–8 mm long, deeply lobed, inner surface glabrous; anthers 3.5–5 mm long; ovary glabrous; functional style 4.5–5 mm long, erect, glabrous or with stellate hairs only, stellae 0.2–0.25 mm across, lateral rays 8–9, central ray 0.7–1.5 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 14–16 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp *c.* 0.7 mm thick; pedicels 17–24 mm long in fruit, 0.6–0.8 mm thick at mid-point; seeds pale yellow, 3.5–3.9 mm long.

***Specimens examined*: New Guinea.** Bioto, Jul–Aug 1918, *White* 581 (BRI). **Northern Territory.** Dalywoi Bay, Gove, Feb 1988, *Russell-Smith* 4933 & *Lucas* (BRI, DNA); Rocky Bay, Yirrkala, Mar 1988, *Russell-Smith* 5167 & *Lucas* (BRI, DNA); 1.5 km NW of Yirrkala, Nov 1989, *Forster* PIF5976 (BRI, DNA). **Queensland.** Cook District: Newcastle Bay, 2.5 miles [4 km] S of Somerset, May 1948, *Brass* 18720 (BRI, CANB); Bamaga district, Galloways Creek area, undated, *Webb* & *Tracey* 6075 (BRI); upstream of Hann Ck, Jul 1986, *Hind* 4542 *et al.* (NSW); Jardine River N.P., 11 km NNW of the Eliot Creek–Jardine River confluence, 38.1 km S of Bamaga, Oct 1993, *Fell* DGF3647 & *Dibella* (BRI).

***Distribution and habitat*:** *Solanum yirrkalense* is known from the northernmost part of Queensland, around Bamaga (**Map 4**). It also grows near Gove in north-eastern Northern Territory, and is known from a single New Guinean specimen. It inhabits coastal vine thickets on sand dunes.

***Phenology*:** Flowers have been collected in February and July–August; mature fruits in March, May and November.

***Notes*:** *S. yirrkalense* differs from *S. discolor* by the mostly broader leaves with longer petioles, the dense indumentum on the lower leaf surface (*vs.* very dense for *S. discolor*), the central ray on the calyx stellae 1–1.5 times as long as laterals (*vs.* 0.5–1 times for *S. discolor*), inflorescence common peduncle 3–12 mm long (*vs.* 0–2 mm long for *S. discolor*).

***Conservation status*:** Not considered at risk.

12. Solanum defensum F.Muell., Fragm. 5: 193 (1866). **Type:** Queensland. Cook District: Cape York Peninsula, undated, *E. Daemel* (lecto: MEL [MEL12284]), here chosen.

Erect, rhizomatous perennial shrub, 1–2.5 m high. Juvenile branchlets with 25–30 prickles per dm, 6–9 mm long; leaves (in outline) elliptical, shallowly-lobed, with 4–6 pairs of lobes; lamina 8–13 cm long, 2.5–4 cm wide, with 10–20 prickles on upper surface. Adult branchlets brown; prickles 1–10 per decimetre, straight, acicular, 4–9 mm long, 13–18 times longer than wide; stellae sparse to dense, 0.25–0.5 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray absent or present, 0–0.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire or shallowly lobed throughout; lobes 3–6 on each side, obtuse, lobing index 1–1.4; lamina 7–14.5 cm long, 2.3–5 cm wide, 2.1–3.2 times longer than broad, apex acute or acuminate, base cuneate or obtuse, oblique part 0–2.5 mm long, obliqueness index 0–2 percent; petioles 0.6–1 cm long, 6–10% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 0–10, straight, acicular, 5–8 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 0–4, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae very sparse to moderate, 0.5–1.7 mm apart, 0.4–0.6 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.2–0.6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–4 mm long, rachis prickles absent; 5–13-flowered, weakly andromonoecious, flowers 5-merous; pedicels 4–8 mm long at anthesis, markedly thicker distally, 0.15–0.25 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes rostrate, 0.2–1 mm long; prickles absent at anthesis; stellae moderate to dense, transparent, 0.25–0.3 mm across, sessile, lateral rays 7 or 8, central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white, mauve or purple, 5–8 mm long, deeply lobed, inner surface sparsely to densely stellate-hairy; anthers 3–4.5 mm long; ovary with stellate hairs only; functional style 3.5–4.5 mm long, erect, with stellate hairs only, stellae *c.* 0.25 mm across, lateral rays 7–10, central ray 0–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 13–17 mm diameter, red, 1-locular (septum absent or incomplete); placenta in cross-section sessile, elliptical; mesocarp juicy, succulent; exocarp 1.2–1.7 mm thick; pedicels 17–28 mm long in fruit, 0.6–0.8 mm thick at mid-point; seeds pale yellow, 3.8–4.3 mm long.

***Specimens examined*: Queensland.** Cook District: Leo Creek, Upper Nesbit River, Aug 1948, *Brass* 19947 (BRI); Table Range, Dead Horse Creek, Oct 1973, *Dockrill* 760

(QRS); McIlwraith Range, Sep 1974, *Hyland* 7643, 7658 (BRI, QRS); Lockerbie Scrub, Bamaga, Sep 1974, *Webb & Tracey* 13481 (CANB, QRS); 'Temple Bay' yards, Sep 1976, *Hyland* 8964 (QRS); northern slopes Mt Tozer, Nov 1977, *Webb & Tracey* 13479 (BRI); near Ginger Mick's Mine, 2 km S of Punsand Bay, Feb 1990, *Forster* PIF6403 (BRI); 2.2 km from Captain Billy Landing hut, on the Heathlands road, Mar 1992, *Johnson* 5023 (BRI); Claudie Falls, 2.5 km NE of Mt Tozer, Iron Range N.P., May 1992, *Fell* DF2614 & *Jensen* (BRI, QRS); Turrel Hill, 10 km WNW of Nesbit River mouth, 51.6 km N of 'Silver Plains' HS., Aug 1993, *Fell* DGF3398 *et al.* (BRI, CANB); 1.5 km ENE of Lamond Hill, 8.5 km NNW of Lockhart River community, Mar 1994, *Fell* DGF4139 & *Stanton* (BRI); Round Mountain, Embley Range, 'Silver Plains', Jul 1997, *Forster* PIF21350 *et al.* (AD, BRI, QRS).

***Distribution and habitat*:** *Solanum defensum* is endemic to Queensland; extending from the tip of Cape York Peninsula to the McIlwraith Range near Coen (**Map 5**). It grows in notophyll rainforest, in hilly terrain with infertile soils derived from metamorphic or granitic rocks.

***Phenology*:** Flowers and fruits may be found at any time of the year.

***Notes*:** *S. defensum* is related to *S. discolor*, *S. yirrkalense* and *S. fervens*, but differs from all these species by the green lower leaf surface (stellate hairs absent to sparse), the central ray of the stellae on the calyx only 0–0.5 times as long as laterals, and the thicker fruiting exocarp.

Sterile specimens of *S. defensum* are readily confused with *S. macoorai*. These species are however allopatric.

***Conservation status*:** Not considered at risk.

13. Solanum discolor R.Br., Prodr. 445 (1810). **Type:** [Queensland.] 'Coen River' [Pennefather River], Carpentaria, 7 November 1802, *R. Brown* (lecto: BM).

***Illustration*:** Symon (1981: 141)

Erect, rhizomatous perennial shrub, 0.5–2 m high. Juvenile stage unknown. Adult branchlets yellow or brown; prickles absent or present, 0–10 per decimetre, straight, acicular, 2–6 mm long, 10–16 times longer than wide; stellae very dense, 0.25–0.4 mm diameter, stalks 0–0.1 mm long; lateral rays 7 or 8, porrect; central ray 0.2–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate, elliptical or ovate, entire or shallowly lobed throughout; lobes 3–6 on each side, obtuse, lobing index 1–1.3; lamina 7–10 cm long, 1.6–4.5 cm wide, 2.3–4.3 times longer than broad, apex acute or acuminate, base cuneate, oblique part 0–3 mm long, obliqueness index 0–4 percent; petioles 0.4–0.9 cm long, 4–10% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–7, straight, acicular, 3–5 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.3–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 8–9, porrect; central ray 0.1–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed or supra-axillary, pseudo-racemose, common peduncle 0–2 mm long, rachis prickles absent; 7–20-flowered, strongly or weakly andromonoecious, flowers 5-merous; pedicels 2–9 mm long at anthesis, same thickness throughout, 0.2–0.4 mm thick at mid-point, prickles absent. Calyx tube 0.5–1.5 mm long, lobes deltate, 0.5–2 mm long; prickles absent at anthesis; stellae dense to very dense, white, 0.25–0.4 mm across, sessile, lateral rays 6–8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 3–7 mm long, deeply lobed, inner surface glabrous; anthers 2.5–4 mm long; ovary glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 10–14 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.4–0.5 mm thick; pedicels 13–18 mm long in fruit, 0.5–0.8 mm thick at mid-point; seeds pale yellow, 2.6–3.6 mm long.

***Specimens examined*: Queensland.** Cook District: between Rocky River and Massey Creek, Sep 1973, *Stocker* 1072 (BRI); Mapoon, S of Cullen Point, Port Musgrave, Feb 1981, *Morton* AM1075 (BRI); S bank of Pennefather River, Aug 1983, *Clarkson* 4914 (BRI); 0.7 km W of Bolt Head, Jul 1990, *Clarkson* 8806 & *Neldner* (BRI); 3.5 km NNE of Massey Ck crossing, 'Silver Plains' station, Jul 1993, *Forster* PIF13614 *et al.* (BRI); 6 km W of the Rocky River mouth, 36.2 km ENE of Coen, 'Silver Plains' holding, Aug 1993, *Fell* DGF3479 *et al.* (BRI, MEL); 'Silver Plains', S of Scrubby Creek and W of Colmer Point, Jun 1995, *Forster*

PIF17061 (AD, BRI, MEL, QRS); Bolt Head, Jun 1996, *Gray* 6857 (BRI); Temple Bay, Bolt Head, Jun 1996, *Forster* PIF19359 (BRI).

***Distribution and habitat*:** *Solanum discolor* is endemic to Queensland, occurring on both the east and west coast of Cape York Peninsula, as far north as Mapoon and as far south as 'Silver Plains' (**Map 7**). It occurs in depauperate vine thicket, sometimes with emergent *Araucaria cunninghamii*, on stranded sand dunes.

***Phenology*:** Flowers are recorded for February, June, July and August; mature fruits from June to September.

***Notes*:** *S. discolor* was in the past more broadly circumscribed to include *S. corifolium* F.Muell., but it differs clearly from that species. See notes under *S. corifolium*.

***Conservation status*:** Not considered at risk.

14. Solanum corifolium F.Muell., Fragm. 2: 166 (1861). **Type:** [Queensland.] Araucaria Ranges, Burnett River, Bunya Bunya Ranges, December 1856, *F. Mueller* (lecto: MEL [MEL 11617]; isolecto: K), fide Symon (1981).

***Illustration*:** Symon (1981: 136)

Sprawling or erect, rhizomatous perennial shrub, 0.6–3 m high. Juvenile branchlets with 15–25 prickles per dm; leaves (in outline) ovate, shallowly-lobed, with 2–3 pairs of lobes; lamina 9–11 cm long, 3.5–4.5 cm wide, with 0–20 prickles on upper surface. Adult branchlets yellow; prickles 4–30 per decimetre, straight, acicular, 3–7 mm long, 12–16 times longer than wide; stellae dense to very dense, 0.15–0.25 mm diameter, sessile; lateral rays 6–8, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire or shallowly lobed throughout; lobes 2–3 on each side, obtuse, lobing index 1–1.2; lamina 4.5–10.5 cm long, 1.9–5 cm wide, 2–2.9 times longer than broad, apex acute, base cuneate, oblique part 0–1.5 mm long, obliqueness index 0–2 percent; petioles 0.3–1.1 cm long, 6–14% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–15, straight, acicular, 3–6 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–5, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae very dense, *c.* 0.05 mm apart, 0.15–0.25 mm diameter, sessile; lateral rays 7 or 8, porrect, central ray absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-umbellate or pseudo-racemose, common peduncle 0–3 mm long, rachis prickles absent; 3–10-flowered, with all flowers bisexual and 5-merous; pedicels 6–21 mm long at anthesis, same thickness throughout, 0.3–0.5 mm thick at mid-point, prickles absent. Calyx tube 1–2.5 mm long, lobes deltate or rostrate, 1.5–3 mm long; prickles absent at anthesis; stellae moderate to dense, 0.15–0.25 mm across, sessile, lateral rays 6–8, central ray absent; finger hairs absent; Type 2 hairs absent. Corolla white or mauve, 8–10 mm long, deeply lobed, inner surface glabrous; anthers 4–5.5 mm long; ovary with Type 2 hairs only; functional style 5.5–7 mm long, erect, with Type 2 hairs only or with stellate and Type 2 hairs, stellae *c.* 0.2 mm across, lateral rays 6–7, central ray 0.5–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 7–12 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.2–0.7 mm thick; pedicels 10–22 mm long in fruit, 0.6–0.9 mm thick at mid-point; seeds pale yellow, 2.8–3.7 mm long.

***Selected specimens examined*: Queensland.** Cook District: S.F.607, Bridle L.A., Dec 1973, *Dansie s.n.* (QRS). North Kennedy District: razorback range NW of Mt Dryander, Jul 1974, *Swan* 75 (BRI); Paluma Holding, May 1982, *Dansie* AFO 05151 (QRS); North Gregory, property of D. & R. Clarke, adjacent to Dryander S.F., Jul 1997, *Champion* 1484 & Cali (BRI). Port Curtis District: Callide Valley, Apr 1937, *White* 11210 (BRI); 'Green Horizons', 8.4 km from Rules Beach Rd along Fingerfield Rd, *c.* 60 km NW of Bundaberg, Oct 1992, *Geckeler et al.* 49 (CANB); S.F.69, SE of Thangool, Mar 1996, *Bean* 10126 (BRI, MEL). Burnett District: Eidsvold, undated, *Bancroft s.n.* (BRI); Bunya Mountains S.F., Mar 1959, *Thorne* 20043a (BRI); Fontainea Scrub, Gurgeena Plateau, S.F.172, Feb 1994, *Forster* PIF14805 (AD, BRI). Wide Bay District: base of Guyra Mount, below Mt Bauple N.P., Feb 1988, *Forster* PIF3535 (BRI); Mt Glastonbury, S.F.242, Dec 1991, *Forster* PIF9277 & *Sharpe* (BRI, MEL). Darling Downs District: 'Sunnyvale', Bell, Mar 1927, *Langford s.n.* (BRI); S.F.197 Diamondy, 32 km NE of Jandowae, Mar 1999, *Forster* PIF24098 & *Booth* (BRI, MEL, QRS). Moreton District:

Mt Glorious, May 1923, *White* 1953 (BRI); Binna Burra, Lamington N.P., Apr 1959, *Thorne* 20408 (BRI); S.F.289, Yarraman, Feb 1972, *Moriarty* 879 (BRI); Palm Grove N.P., Tamborine Mountain, Jul 1983, *Guymer* 1868 & *McDonald* (AD, BRI, GUAM); Nineteen L.A., T.R.209, Mt Brisbane, Jun 1990, *Forster* PIF6862 *et al.* (BRI, L, MEL, QRS); Murray Grey Drive, Dulong, W of Nambour, Jan 2000, *Bean* 16004 (BRI); Wilkie's Scrub, Wongawallan, 7 km W of Coomera, Jul 2001, *Bean* 17691 (BRI). **New South Wales.** North Coast. Richmond River, *anno* 1876, *Fawcett s.n.* (NSW).

***Distribution and habitat*:** *Solanum corifolium* is common in south-eastern Queensland as far north as Bundaberg and Biloela, and with disjunct occurrences near Proserpine, Ingham and Mareeba. There is an old record from far north-eastern New South Wales (**Map 7**). It grows in Araucarian or other mixed notophyll rainforest, in hilly to mountainous terrain.

***Phenology*:** Flowers are recorded from November to March; the exception is a flowering record from north Queensland in July (*Champion* 1484 & *Cali*); mature fruits are recorded between January and July.

***Notes*:** *S. corifolium* is closely related to *S. discolor*, but differs by the branchlet stellae only 0.15–0.25 mm across (0.25–0.4 mm for *S. discolor*), central ray of branchlet stellae lacking (0.2–0.8 times as long as laterals for *S. discolor*), all flowers bisexual (some flowers male for *S. discolor*), corolla 8–10 mm radius (3–7 mm for *S. discolor*), anthers 4–5.5 mm long (2.5–4 mm long for *S. discolor*), ovary with Type 2 hairs (glabrous for *S. discolor*), and the mostly smaller fruits.

***Conservation status*:** Widespread. Not considered at risk.

15. Solanum mentiens A.R.Bean **sp. nov.** Frutex prostratus caulibus longis serpentibus ad nodos radicantibus; folia ovata 1.5–2.2plo longiora quam latiora, glabra et atrovirentia supra, densissime pilosa subtus, apice acuto; stellae omnes radio centrali carentes; inflorescentia floribus aliquibus functionale maribus; fructus maturitate laete rubra, exocarpio 0.8–1.0 mm crasso. **Typus:** Queensland. Moreton District: Bahr's Scrub, 5 km SSW of Beenleigh, J. Davidson property, 19 December 2001, *P.I. Forster* 28047 & *G. Leiper* (holo: BRI (1 sheet + spirit); iso: A, K, L, MEL, NSW).

Solanum discolor var. *procumbens* C.T.White, *Proc. Roy. Soc. Queensland* 55: 71 (1944). **Type:** Queensland. Moreton District: Upper Teviot, undated, *B. Scortechini* (holo: MEL).

Prostrate, stoloniferous perennial shrub, *c.* 0.1 m high. Juvenile stage absent. Adult branchlets yellow or brown; prickles absent or present, 0–10 per decimetre, straight, acicular, 2–7 mm long, 8–10 times longer than wide; stellae dense to very dense, 0.15–0.2 mm diameter, sessile; lateral rays 6–8, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire; lamina 5–7.5 cm long, 2.7–4 cm wide, 1.5–2.2 times longer than broad, apex obtuse, base cuneate or obtuse, oblique part 0–3.5 mm long, obliqueness index 0–6 percent; petioles 0.5–1.1 cm long, 7–20% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–3, straight, acicular, 2–5 mm long, prickles absent or present on midvein only; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.2–0.3 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 0–3 mm long, rachis prickles absent; 1–6-flowered, weakly andromonoecious, flowers 5-merous; pedicels 6–18 mm long at anthesis, same thickness throughout, 0.3–0.5 mm thick at mid-point, prickles absent. Calyx tube 2–4 mm long, lobes elliptic or deltate, 1–3 mm long; prickles absent at anthesis; stellae moderate, transparent, 0.15–0.25 mm across, sessile, lateral rays 6–8, central ray absent; finger hairs absent; Type 2 hairs absent. Corolla white, 7–12 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 4.5–5.5 mm long; ovary with Type 2 hairs only; functional style 5.5–7 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, globular, 10–12 mm diameter, red, 1-locular (septum absent or incomplete); placenta in cross-section sessile, semi-circular to elliptical; mesocarp moist but not juicy; exocarp 0.8–1 mm thick; pedicels 22–25 mm long in fruit, 0.8–1 mm thick at mid-point; seeds pale yellow, 2.4–3.2 mm long. **Fig. 18.**

Fig. 18. Holotype of ***Solanum mentiens***.

***Specimens examined*: Queensland.** MORETON DISTRICT: near Canungra, May 1917, *White s.n.* (BRI); end of French's Creek road, *c.* 12 km SW of Boonah, Jul 1984, *Bird s.n.* (BRI); Bahr's Scrub, near Beenleigh, Jan 2000, *Leiper s.n.* (BRI); Bahr's Scrub, 5 km SW of Beenleigh, Feb 2001, *Bean* 17370 (BRI, MEL); Bahr's Scrub, 6 km SW of Beenleigh, Feb 2002, *Bean* 18513 (BRI); slopes of Mt French, W of Boonah, Apr 2003, *Bean* 20144 (BRI).

***Distribution and habitat*:** *Solanum mentiens* is endemic to Queensland. Confined to the Boonah and Beenleigh areas in far southeastern Queensland (**Map 5**). It inhabits Araucarian notophyll vineforest.

***Phenology*:** Flowers are recorded for December, January and February; fruits for February and July.

***Notes*:** This species is very distinct in the field due to its ground-hugging prostrate habit. It produces long trailing stems that strike roots frequently at the nodes. The lack of a central ray on any stellae immediately distinguishes *S. mentiens* from the other two species with the same habit (*S. serpens* and *S. acanthodapis*).

Solanum mentiens is closely related to *S. corifolium*, but differs by the prostrate stoloniferous habit, leaves 1.5–2.2 times longer than broad (2.0–2.9 times for *S. corifolium*); leaf apex obtuse (acute for *S. corifolium*); inflorescence with some flowers functionally male (all bisexual in *S. corifolium*); placenta sessile, semicircular to elliptical (not apparent in *S. corifolium*); and exocarp 0.8–1.0 mm thick (0.2–0.7 mm for *S. corifolium*).

The locality of "Upper Teviot" given by Scortechini for his specimen refers to the Teviot Brook, which flows through the town of Boonah.

***Conservation status*:** *S. mentiens* is currently known from 3 locations. Weeds or land clearance threaten all populations. One population may be just within the Mt French National Park. Applying the IUCN guidelines (IUCN. 2001), a category of "Endangered" is recommended (EN B1ab(iii,v)+2ab(iii,v); C1).

***Etymology*:** From the Latin *mentiens*, meaning 'imitating'. This refers to its similarity to *S. corifolium*.

16. Solanum shirleyanum Domin, *Biblioth. Bot.* 89: 578 (1929). **Type:** Queensland. MORETON DISTRICT: Tamborine Mountain, March 1910, *K. Domin s.n.* (holo: PR (2 sheets)).

Erect, rhizomatous perennial shrub, 0.6–1.8 m high. Juvenile branchlets with 1–20 prickles per dm; leaves (in outline) lanceolate or elliptical or ovate, entire or shallowly-lobed, with 2–3 pairs of lobes; lamina 9–10 cm long, 3–4.2 cm wide, with 2–8 prickles on upper surface. Adult branchlets yellow or brown; prickles absent or present, 0–6 per decimetre, straight, acicular or broad-based, 2–5 mm long, 6–12 times longer than wide; stellae dense to very dense, 0.25–0.4 mm diameter, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray 0.5–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire; lamina 4–11 cm long, 1.5–4 cm wide, 2–3 times longer than broad, apex acute or acuminate, rarely obtuse; base cuneate, oblique part 0–3.5 mm long, obliqueness index 0–3 percent; petioles 0.25–1.3 cm long, 5–12% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–5, straight, acicular, 4–6 mm long, prickles absent or present on midvein only; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse, 0.8–4 mm apart, 0.3–0.4 mm across, sessile; lateral rays 6–8, porrect; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green or greenish-white; prickles absent; stellae dense, 0.1–0.3 mm apart, 0.3–0.5 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 1–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-umbellate, common peduncle absent; 2–9-flowered, with all flowers bisexual and 5-merous; pedicels 7–17 mm long at anthesis, same thickness throughout, 0.2–0.3 mm thick at mid-point, prickles absent. Calyx tube 2–3 mm long, lobes elliptic, 0.3–1 mm long; prickles absent at anthesis; stellae sparse to moderate, transparent, 0.15–0.25 mm across, sessile, lateral rays 5–7, central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent or present. Corolla mauve, 7–9 mm long, deeply lobed, inner surface glabrous; anthers 3.5–4.5 mm long; ovary with Type 2 hairs only; functional style

5.5–7 mm long, erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 3.5–6 mm diameter, red, glabrous or with a few scattered Type 2 hairs, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.1–0.2 mm thick; pedicels 13–21 mm long in fruit, 0.4–0.7 mm thick at mid-point; seeds pale yellow, 2.6–3 mm long.

***Specimens examined*: Queensland.** Wide Bay District: Gympie, undated, *Kenny* (BRI); Peters Ck valley, Conondale Range S.F., above Funnel Hut site, Oct 1982, *McDonald* 3627 (BRI); Goods Rd, S.F.274 Conondale, Feb 1991, *McDonald* 4720 (BRI); Lenthalls Dam scrub, S.F.1294, Oct 1995, *Forster* PIF17915 (BRI); S.F.783, 4 km NW of Montville, May 2001, *Forster* PIF27114 (BRI). Moreton District: Maroochie, Oct 1874, *Bailey* (BRI); Mt Tamborine, 1888, *Simmonds s.n.* (BRI); Palmwoods, May 1907, *White s.n.* (BRI); Currumbin, 1912, *O'Brien* (BRI); eastern foothills of Darlington Range, Upper Ormeau Rd, off Pacific Hwy, Apr 1984, *Williams* 84028 (BRI); Bahr's Scrub, 5 km SW of Beenleigh, Feb 2001, *Bean* 17371 (BRI, NSW); Armitage Creek road, Canungra Army Reserve, 7 km SE of Canungra, Feb 2001, *Bean* 17382 (BRI); Rosins Lookout Conservation Park, Beechmont, Jul 2001, *Forster* PIF27494 *et al.* (BRI). **New South Wales.** North Coast: Tyalgum Ridge, Macpherson Range, *c.* 25 km WNW of Murwillumbah, Dec 1977, *Haegi* 1529 (NSW); 1.1 km along South Chowan road, Nullum S.F., S of Murwillumbah, Apr 2001, *Bean* 17558 (BRI).

***Distribution and habitat*:** *Solanum shirleyanum* occurs in high rainfall areas of southeastern Queensland, and extends to near Murwillumbah in N.S.W. (**Map 6**). It grows on the margins of notophyll rainforest where *Eucalyptus grandis* is often prominent. Soils are infertile, and associated species may include *Caldcluvia paniculosa* and *Callicoma serratifolia*. It occurs at relatively low altitudes, although reaching 560 metres in the Conondale Ranges.

***Phenology*:** Flowers are recorded for October, February and April; mature fruits in February, April, May and July.

***Notes*:** It is related to both *S. stelligerum* and *S. corifolium*, and Domin considered that it was a hybrid between these two species. However, my fieldwork has shown that *S. shirleyanum* should be regarded as a species in its own right. It forms populations uniform in morphology, flowers and fruits freely, and can occur in areas geographically remote from the postulated parents.

It differs from *S. corifolium* by the smaller flowers and fruits, more slender corolla lobes, and leaf stellae with conspicuous central rays. It differs from *S. stelligerum* by the shorter petioles, leaves with stellae all sessile and having shorter central rays, smaller fruits, larger seeds and glabrous style.

***Conservation status*:** Moderately widespread. Not considered at risk.

17. Solanum dryanderense A.R.Bean **sp. nov.**
Frutex; aculei ramuli praesentes sed sparse distributi; folia integra ovata, petiolus longitudine 4–11% laminae aequans, supra viridia glabra, subtus pilis stellatis petiolis 0.15–0.25 mm longis, apice acuto usque acuminato; aculei calycis absentes; fructus maturitate rubri, seminibus 3.5–4 mm longis. **Typus:** Queensland. North Kennedy District: *c.* 15 km N of Proserpine, near crest of ridge leading to east summit of Mt Dryander, 21 July 1974, *R.J. Henderson* H2214, *V. Moriarty & J. Swan* (holo: BRI).

Solanum sp. (Mt Dryander G.P. Guymer 1743) in Henderson (2002).

Erect, rhizomatous perennial shrub, 1–3 m high. Juvenile stage unknown. Adult branchlets grey or brown; prickles absent or present, 0–10 per decimetre, straight, acicular, 2–6 mm long, 10–18 times longer than wide; stellae very dense, 0.4–0.6 mm diameter, stalks 0–0.2 mm long; lateral rays 6–13, porrect or multiradiate; central ray 0.7–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 5–10 cm long, 2–4 cm wide, 2.1–3.2 times longer than broad, apex acute or acuminate, base cuneate or obtuse, oblique part 0–1 mm long, obliqueness index 0–2 percent; petioles 0.2–1.1 cm long, 4–11% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–2, straight, acicular, 1–6 mm long, prickles absent or present on midvein only; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* yellowish; prickles absent; stellae dense, 0.1–0.25 mm apart, 0.4–0.6 mm diameter, stalks 0.15–0.25 mm long; lateral rays 6–8, porrect; central ray 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle 0-1 mm long; 1 or 2-flowered, flowers 5-merous; pedicels *c.* 9

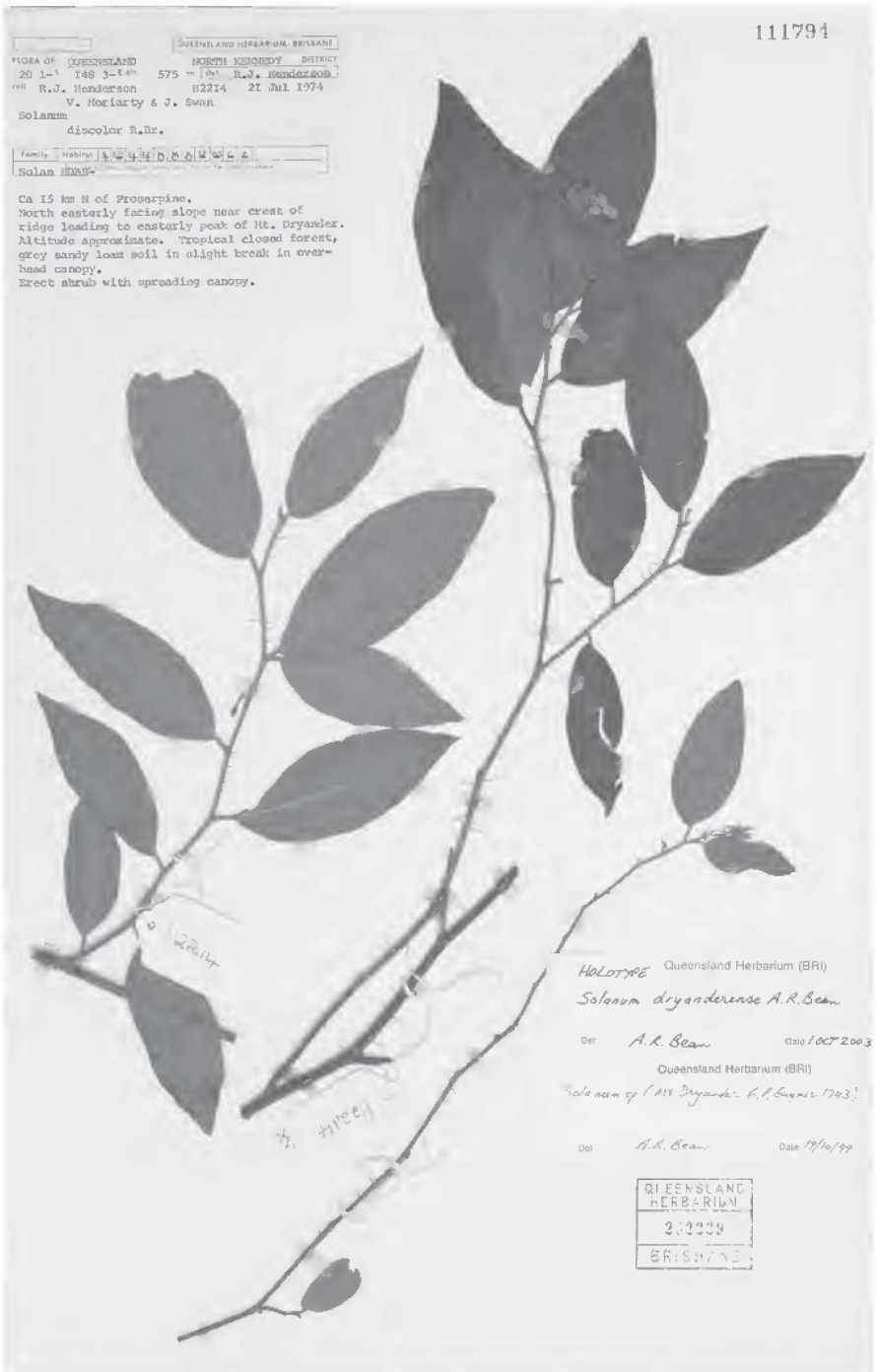

Fig. 19. Holotype of ***Solanum dryanderense***.

mm long at anthesis, same thickness throughout, 0.4–0.5 mm thick at mid-point, prickles absent. Calyx prickles absent at anthesis; stellae moderate, transparent, *c.* 0.4 mm across, stalks 0–0.1 mm long, lateral rays 6–8, central ray 0.7–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. 6–7 mm long, deeply lobed, inner surface glabrous; anthers *c.* 5 mm long; functional style *c.* 6 mm long, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 6–7 mm diameter, red, 1-locular (septum absent or incomplete); mesocarp juicy, succulent; pedicels 15–20 mm long in fruit, 0.5–0.6 mm thick at mid-point; seeds pale yellow, 3.5–4 mm long. **Fig. 19.**

***Specimens examined*: Queensland.** North Kennedy District: upper Dryander Creek, Mt Dryander, NE of Proserpine, Oct 1969, *Webb & Tracey* 8354 (BRI); *c.* 15 km N of Proserpine, on mountain spur closely parallel to Mt Dryander Range, Jul 1974, *Henderson* H2178A *et al.* (BRI); *c.* 15 km N of Proserpine, on steep SW slopes of Mt Dryander, Jul 1974, *Henderson* H2216 *et al.* (BRI); Mt Dryander, Jul 1974, *Swan* 77 (BRI); Mt Dryander, Jul 1974, *Swan* 82 (BRI); headwaters of Box Creek, in vicinity of The Bloodwoods, Mt Dryander, May 1982, *Guymer* 1743 (BRI); ridge above Vine Creek, Mt Dryander, N of Proserpine, May 1992, *McDonald* 5098 (BRI).

***Distribution and habitat*:** *Solanum dryanderense* is endemic to Queensland. Known only from Mt Dryander, north of Proserpine (**Map 4**). Most collections have been made between 400 and 600 metres altitude, with one collection given as 200 metres altitude. It inhabits sunny breaks in notophyll rainforest on steep ridges.

***Phenology*:** Very little fertile material is available. A single flower was collected in July, and mature fruits have been collected in May and July.

***Notes*:** *S. dryanderense* is closely related to *S. shirleyanum*, but differs by the larger stellae of the calyx and branchlets, the stellae of the lower leaf surface with stalks 0.15–0.25 mm long (sessile for *S. shirleyanum*), calyx stellae *c.* 0.4 mm diameter (0.15–0.25 mm daimeter for *S. shirleyanum*) and seeds 3.5–4 mm long (2.6–3 mm long for *S. shirleyanum*).

Conservation status: *S. dryanderense* is known only from Mt Dryander near Proserpine, where it is protected within a National Park. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU D1+2).

***Etymology*:** The epithet refers to Mt Dryander near Proserpine, the only known locality for the species.

18. Solanum stelligerum Sm., Exot. Bot. 2: 57, t. 88 (1805). *Solanum stelligerum* var. *stelligerum* Benth., Fl. Austral. 451 (1868) **Type:** New South Wales. Port Jackson, 1792, *J. White* (holo: LINN, *n.v.*, microfiche 365.13)

Solanum lucorum Domin, *Repert. Spec. Nov. Regni Veg.* 12: 130 (1913). *Solanum stelligerum* var. *lucorum* F. Muell. ex Benth. Fl. Austral. 451 (1868). **Type:** [Queensland.] Araucaria Ranges, Burnett River, December 1856, *F. Mueller* (holo: K; iso: MEL [MEL 14113]).

***Illustration*:** Symon (1981: 129)

Erect, rhizomatous perennial shrub, 0.8–2.5 m high. Juvenile branchlets with 20–60 prickles per dm; leaves (in outline) lanceolate, shallowly-lobed, with 1 or 2 pairs of lobes; lamina 4–7 cm long, 1.3–2.4 cm wide, with 1–5 prickles on upper surface. Adult branchlets yellow or brown; prickles absent or present, 0–10 per decimetre, straight, acicular, 6–10 mm long, 14–18 times longer than wide; stellae sparse to very dense, 0.3–0.5 mm diameter, stalks 0–0.4 mm long; lateral rays 7 or 8, porrect; central ray 1–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent or sparse. *Adult leaves* lanceolate or ovate, entire; lamina 2.5–13 cm long, 0.9–4.5 cm wide, 1.8–3.5 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–3 mm long, obliqueness index 0–5 percent; petioles 0.4–1.8 cm long, 11–16% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–3, straight, acicular, 6–9 mm long, prickles absent or present on midvein only; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae absent from surface to sparse, 0.5–1.5 mm apart, 0.3–0.8 mm across, sessile; lateral rays 4–8, porrect; central ray 1.5–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae dense to very dense, 0.05–0.1 mm apart, 0.3–0.6 mm diameter, stalks 0–0.6 mm long; lateral rays 7 or 8, porrect; central ray 1.5–4

times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 1–2 mm long, rachis prickles absent; 1–5-flowered, weakly andromonoecious or with all flowers bisexual, flowers 5-merous; pedicels 8–15 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.4–0.6 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes deltate or rostrate, 0.5–3 mm long; prickles absent at anthesis; stellae very dense, yellow or white, 0.25–0.4 mm across, stalks 0–0.1 mm long, lateral rays 7 or 8, central ray 1–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent, or present. Corolla white, mauve or purple, 6–12 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 4–5.5 mm long; ovary with Type 2 hairs only, or with stellate and Type 2 hairs; functional style 5.5–8 mm long, erect, with Type 2 hairs only or with stellate and Type 2 hairs, stellae 0.25–0.4 mm across, lateral rays 6–7, central ray 1–3 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–4 per inflorescence, globular, 6.5–9 mm diameter, red, glabrous or with a few scattered stellate hairs, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.25–0.5 mm thick; pedicels 14–21 mm long in fruit, 0.6–0.7 mm thick at mid-point; seeds pale yellow, 1.9–2.2 mm long. *Devil's Needles*.

***Selected specimens examined*: Queensland.** North Kennedy District: Selheim, 25 km E of Charters Towers, Mar 1988, *Collins* MPA44 (BRI); 'Fanning River', *c.* 25 km NW of Mingela, Aug 1989, *Fell* FAN83 & *Cumming* (BRI). Port Curtis District: Marmor near Rockhampton, Mar 1920, *Francis* (BRI); Mt Morgan, Jul 1938, *Goy* 327 (BRI); western slopes of Mt Larcom Range, near Yarwun, May 1971, *Webb* & *Tracey* 10592A (BRI, CANB); Mt Etna, Oct 1976, *Hyland* 9099 (QRS); Burnett Range, 0.5 km NW of Mt Fort William, May 1977, *Crisp* 2701 (AD, BRI, CANB); Kroombit Tableland, *c.* 60 km SW of Gladstone, Jun 1977, *Crisp* 2850 (AD, BRI, CANB); S.F.69, SE of Thangool, Jun 1996, *Bean* 10432 (BRI, MEL). Burnett District: 2.5 km from Proston on road to weir, May 1996, *Bean* 10287 (BRI, MEL); *c.* 5 km due ENE of Ceratodus railway junction, E of the Burnett River, Apr 1997, *Pollock* ABP575 (BRI); Mt Blandy, 4 km W of Mingo Crossing, Mar 1999, *Forster* PIF24152 & *Booth* (AD, BRI, QRS); Bunya Mountains, 1.8 km along Nanango road, Jun 2001, *Bean* 17676 (BRI); Hoggs Rd, Tingoora, N of Kingaroy, Nov 2001, *Bean* 18103 (BRI, MEL). Wide Bay District: Kin Kin, Mar 1916, *Francis* & *White* (BRI); near bank of Kolan River, about N of Gin Gin, Apr 1945, *Blake* 15519 & *Webb* (BRI); Yerra, 15 miles [24 km] W of Maryborough, Jan 1954, *Cross* (BRI); south of Anderson road, 10 km W of Cooroy, Nov 1993, *Bean* 7064 (BRI); Pine Creek scrub, 1 km E of Electra, Oct 1996, *Forster* PIF 20049 & *Leiper* (BRI, MEL). Darling Downs District: Cunningham's Gap, Main Range, Jul 1930, *White* 6867 (BRI); The Head, near border fence, Jun 1980, *Williams* 80067 (BRI); behind Greenwood churchyard, N of Oakey, Oct 1998, *Fensham* 3505 (BRI); May Road, W of Clifton, Jan 2002, *Bean* 18357 (BRI, CANB). Moreton District: scrub below Enoggera Dam, Aug 1874, *Bailey s.n.* (BRI); Benarkin S.F., Blackbutt, Aug 1967, *Henderson* H293 (BRI); Falls Creek, 4.5 km NW of West Haldon, May 1987, *Forster* PIF2933 & *Bird* (BRI); Mt Davidson, 5 km S of Withcott, Jul 1990, *Forster* PIF6903 & *Bird* (BRI, MEL, QRS); S.F.258 Mt Binga, 11 km SE of Cooyar, Feb 2000, *Bean* 16058 (BRI, MEL); Back Creek road, Canungra Army Reserve, 5 km SE of Canungra, Feb 2001, *Bean* 17380 (BRI). **New South Wales.** North Coast: Lismore, Jul 1894, *Baeuerlen* 1267 (AD, BRI, CANB, MO, NSW); Mt Warning, Tweed River, Aug 1916, *Boorman* (AD, BRI, NSW); Branch Road, Dalmorton S.F., SW of Grafton, Jan 2001, *Bean* 17257 (BRI); 2.5 km along Carnham Road, Fine Flower, NW of Grafton, Feb 2001, *Bean* 17335 (BRI, MEL, NSW).

***Distribution and habitat*:** *Solanum stelligerum* is a widespread species ranging from Bodalla in southern New South Wales to Rockhampton in Queensland, with a disjunct occurrence near Charters Towers (**Map 8**). It inhabits margins of notophyll rainforest or shrubby eucalypt open-forest, on many soil types and at low to high altitudes. It is the most commonly encountered native species in eastern coastal Australia.

***Phenology*:** Flowers and fruits may be found at any time of the year.

***Notes*:** Most closely related to *S. parvifolium* subsp. *parvifolium*, but differs by the broader leaves (1.8–3.5 times longer than wide), stellae on all plant parts with a long central ray (1–5 times as long as laterals), the presence of long-stalked stellae (to 0.6 mm long) on the lower leaf surface, the rusty tomentum at least on the veins of the lower leaf surface, and the shallowly lobed juvenile leaves (entire for *S. parvifolium* subsp. *parvifolium*).

***Conservation status*:** Widespread. Not considered at risk.

19. Solanum parvifolium R.Br., Prodr. 446 (1810). **Type:** [Queensland. Port Curtis District:] Broadsound, 18 September 1802, *R. Brown* [Bennett No. 2673] (lecto: BM; isolecto: K), *fide* Symon (1981).

Solanum accedens Domin, *Repert. Spec. Nov. Regni Veg.* 12: 130–1 (1913). **Type:** Queensland. Rockhampton, undated, *J. Dallachy s.n.* (holo: K).

Two subspecies are recognised, and are distinguished by the following key:

Leaves 2.5–7 × 0.5–1.5 cm, Type 2 hairs absent; ovary with Type 2 hairs only; style 3.5–6.5 mm long; flowers all bisexual .... ***S. parvifolium*** subsp. ***parvifolium***

Leaves 7.5–13.5 × 1.3–3.5 cm, Type 2 hairs present; ovary either without indumentum or with both stellate hairs and Type 2 hairs; style 7.0–9.0 mm long; male flowers consistently present in the inflorescence ..... ***S. parvifolium*** subsp. ***tropicum***

19a. *Solanum parvifolium* subsp. *parvifolium*

***Illustration*:** Symon (1981: 131)

Erect, rhizomatous perennial shrub, 0.5–1.2 m high. Juvenile stage unknown. Adult branchlets grey or brown; prickles 1–20 per decimetre, straight, acicular, 0.5–7 mm long, 10–18 times longer than wide; stellae sparse to dense, 0.2–0.4 mm diameter, sessile; lateral rays 6–8, porrect; central ray 0.2–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* linear or narrow lanceolate, entire; lamina 2.5–7 cm long, 0.5–1.5 cm wide, 3.7–7.5 times longer than broad, apex obtuse or acute, base cuneate, oblique part 0–3 mm long, obliqueness index 0–4 percent; petioles 0.2–0.9 cm long, 7–16% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse, 0.8–5 mm apart, 0.3–0.5 mm across, sessile; lateral rays 7 or 8, porrect; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.2–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 7–9, porrect; central ray 0.2–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 0–4 mm long, rachis prickles absent; 1–8-flowered, with all flowers bisexual and 5-merous; pedicels 7–13 mm long at anthesis, same thickness throughout, 0.4–0.7 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes deltate, 1–3 mm long; prickles absent at anthesis; stellae dense, yellow or white, 0.25–0.4 mm across, sessile, lateral rays 7 or 8, central ray 0.2–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–9 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 3.5–5 mm long; ovary with Type 2 hairs only; functional style 3.5–6.5 mm long, erect, with Type 2 hairs only or with stellate and Type 2 hairs, stellae 0.3–0.4 mm across, lateral rays 7 or 8, central ray *c.* 0.3 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–6 per inflorescence, globular, 6–8 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; pedicels 11–27 mm long in fruit, 0.5–0.7 mm thick at mid-point; seeds pale yellow, 1.9–2.3 mm long.

***Selected specimens examined*: Queensland**. North Kennedy District: 14 km E of 'Mt Cooper' HS, Jun 1992, *Thompson* CHA141 & *Sharpe* (AD, BISH, BRI). Mitchell District: base of Great Dividing Range on W side, Sep 1984, *O'Keeffe* 600 (BRI). South Kennedy District: Alpha, Sep 1959, *Macartney* (BRI); 'Strathmore', 14 miles [23 km] W of Collinsville, May 1960, *Johnson* 1804 (BRI). Leichhardt District: Moura–Baralaba road, *c.* 8 miles [13 km] from Baralaba, May 1960, *Johnson* 1701 (BRI); Dipperu N.P., *c.* 24 km S of Nebo, Sep 1971, *McDonald* 152 (BRI); Yatton Ck, on Sarina–Marlborough road, *c.* 93 km from Marlborough, Jul 1974, *Moriarty* 1543 (BRI, CANB); Dry Creek valley, Ka Ka Mundi section, Carnarvon N.P., Aug 1990, *McDonald* 4615 & *Bean* (BRI); Melaleuca creek scrub, 'Rookwood', Apr 1991, *Forster* PIF7937 & *McDonald* (BRI, QRS); 'Moorang', 30.7 km ENE of Taroom, Nov 1996, *Halford* Q3110 & *Dowling* (BRI); Cannondale scrub, Expedition N.P., Amphitheatre section, Nov 1998, *Forster* PIF23841 & *Booth* (BRI, MEL, QRS); 20 km S of Injune, Dec 1999, *McDonald* KRM165 (BRI). Port Curtis District: Ogmore, Sep 1943, *Blake* 15312 (BRI); regional experiment Station, Biloela, Feb 1957, *Daniels* 30 (BRI); *c.* 29 km SW of Ridgelands, Fitzroy Shire, Apr 1990, *Anderson* 4847 (BRI); 15 km NE of Biloela, 3 km N of Callide Dam, Jul 1992, *Thompson* BIL7 (AD, BRI, NSW); near Gumigil Mine, Marlborough, Dec 1998, *Batianoff* 981227 *et al.* (BRI). Warrego District: 13 km NE of 'Etona', Jul 1977, *Purdie* 734D (BRI). Maranoa District: Combabula S.F., 28 km NE of Yuleba, Jul 1990, *Warrian* CMW518 (BRI); 'Wombil Downs' station, *c.* 40 km NW of Dirranbandi, Dec 1999, *Franks* AJF9911046 (BRI); Surat–Yuleba road, *c.* 17 km from Surat, Apr 2001, *Bean* 17649 & *Pedley* (BRI, PRE). Darling Downs District: Brookvale Park, 8 km from Oakey, Jun 1993, *Alcock* 11265 (AD, BRI, CANB, K, MO); 14 km N of Goondiwindi, towards Moonie, Feb 1996, *Bean* 9904 (BRI); 2.0 km S of 'Wyaga', NE of Goondiwindi, Nov 1999, *Bean* 15873 (BRI, MEL, MO, NSW); 7.8 km N of Miles, Oct 2000, *McDonald* KRM249 (BRI). **New South Wales.** North Western Slopes: Boronga Nature Reserve, 14.4 km E of Boomi, Sep 2001, *Bean* 17890 (BRI, MEL, NSW); 13.7 km E of North Star,

Sep 2001, *Bean* 17902 (BRI). North West Plains: 8 miles [13 km] from Collarenebri, on the road to Walgett, Nov 1967, *McGillivray* 2803 (NSW); Watervale Reserve, 16 miles [26 km] N of Moree, Oct 1968, *McBarron* 15727 (BRI, NSW); 'Warivan', 7.4 km S of North Star on road to Warialda, Sep 1988, *Moore* 8833 (CANB).

***Distribution and habitat*:** *Solanum parvifolium* ssp. *parvifolium* is widespread from the north-western plains of N.S.W. to Charters Towers in Queensland (**Map 6**). It grows in Brigalow scrubs, vine thickets and in shrubby eucalypt woodland, on a variety of soils.

***Phenology*:** Flowers and fruits may be found at any time of the year.

***Notes*:** Most closely related to *S. stelligerum*, and apparently intergrading with it in the Rockhampton area, and also in the Bunya Mtns–Warwick area. *S. parvifolium* ssp. *parvifolium* differs by its narrower leaves, 3.7–7.5 times longer than broad (*vs.* 1.8–3.5 times for *S. stelligerum*), tomentum not rusty (*vs.* at least some rusty coloured stellae on leaf undersides for *S. stelligerum*) and with stellae central ray (leaf undersides) 0.2–1 times as long as laterals (*vs.* 1.5–4 times as long as laterals for *S. stelligerum*), and the lack of long-stalked stellae on midrib of leaf undersides.

***Conservation status*:** Widespread. Not considered at risk.

19b. Solanum parvifolium subsp. **tropicum** A.R.Bean **subsp. nov.** affinis *S. parvifolio* sens. str. sed foliis longioribus latioribusque, in pagina superiore folii pilis Type 2 et indumento stellato induta, stylo longiore et praesentia constante florum masculorum in inflorescentia differens. **Typus:** Queensland. North Kennedy District: Herberton water Supply Weir, Wild River head, Moomin area, 25 April 2002, *P.I. Forster* 28670 (holo: BRI (2 sheets + spirit); iso: AD, K, L, MEL, MO, NSW).

Erect, rhizomatous perennial shrub, 0.6–1.5 m high. Juvenile stage unknown. Adult branchlets grey or brown or green; prickles 1–20 per decimetre, straight, acicular, 4–7 mm long, 8–18 times longer than wide; stellae sparse to dense, 0.3–0.6 mm diameter, stalks 0–0.2 mm long; lateral rays 6–8, porrect; central ray 0.1–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* linear or narrow lanceolate, entire; lamina 7.5–13.5 cm long, 1.3–3.5 cm wide, 3.3–7 times longer than broad, apex acute, base cuneate or obtuse, oblique part 0–2 mm long, obliqueness index 0–3 percent; petioles 0.7–1.3 cm long, 7–13% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse to moderate density, 0.3–3 mm apart, 0.3–0.5 mm across, sessile; lateral rays 6–8, porrect; central ray 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.1–1.5 mm apart. *Lower leaf surface* white; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.4–0.6 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.3–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–6 mm long, rachis prickles absent; 2–6-flowered, strongly or weakly andromonoecious, flowers 4 or 5-merous; pedicels 14–24 mm long at anthesis, markedly thicker distally, 0.4–0.8 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes attenuate, 2–3.5 mm long; prickles absent at anthesis; stellae dense to very dense, yellow or brown or rusty, 0.3–0.5 mm across, sessile, lateral rays 7 or 8, central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 9–15 mm long, rotate or shallowly lobed, inner surface glabrous; anthers 4.5–6.5 mm long; ovary glabrous, or with stellate and Type 2 hairs; functional style 7–9 mm long, erect, glabrous or with Type 2 hairs only or with stellate and Type 2 hairs, stellae *c.* 0.4 mm across, central ray *c.* 0.5 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 5–7 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp *c.* 0.3 mm thick; pedicels 26–33 mm long in fruit, 0.5–1 mm thick at mid-point; seeds pale yellow, 2–2.4 mm long. **Fig. 20.**

Fig. 20. Holotype of ***Solanum parvifolium*** subsp. ***tropicum.***

Specimens examined: **Queensland.** Cook District: track to Wallum Trig, Atherton Tablelands, Sep 1977, *Powell* 672 & *Armstrong* (BRI, NSW); Turkey Scrub, 'Whitewater', Jan 1993, *Fensham* 345 (BRI); Mt Baldy S.F., SW of Atherton, Apr 2002, *Bean* 18869 & *McDonald* (BRI). North Kennedy District: Mt Fox, Sep 1949, *Clemens s.n.* (BRI); 41 km from 'Reedy Brook' towards 'Mt Fox', Aug 1972, *Gittins* 2508 (BRI); 'Jervoise' Holding, May 1979, *Hyland* 9931 (BRI, QRS); Forty Mile scrub N.P., 60 km SSW of Mt Garnet, Jan 1990, *Batianoff* 900133 & *Smith* (BRI); Mt Abbot, 50 km W of Bowen, Mar 1992, *Bean* 4220 (BRI); Mt Moti, Bluewater Range, WNW of Townsville, May 1996, *Cumming* 14700 (BRI); Hugh Nelson Range, SE of Herberton, Jan 1998, *Jago* 4641 & *Wannan* (BRI).

Distribution and habitat: *Solanum parvifolium* ssp. *tropicum* is endemic to Queensland. Extends from Mt Abbot (near Bowen) to Atherton, and west to Forty Mile Scrub N.P. and Jervoise Holding (**Map 6**). It inhabits rainforest margins or "wet sclerophyll" forest with shrubby understorey.

***Phenology*:** Flowers are recorded from January to April and for September; mature fruits for January and August.

***Notes*:** Typical *S. parvifolium* ssp. *tropicum* differs from *S. parvifolium s. str.* by the longer and broader leaves, the upper leaf surface with Type 2 hairs, the longer pedicels, the ovary either glabrous or with both stellate hairs and Type 2 hairs, the longer style and the presence of male flowers in the inflorescence. Some collections, notably from the Forty Mile Scrub, are morphologically somewhat intermediate between the subspecies.

***Conservation status*:** Widespread. Not considered at risk.

***Etymology*:** From the Latin *tropicus*, meaning tropical. This refers to the distribution of the subspecies.

20. Solanum ferocissimum Lindl. in T.Mitch., Three Exped. Australia 2: 58 (1838); *S. ferocissimum var. ferocissimum* Domin, Biblioth. Bot. 89: 580 (1929). **Type:** New South Wales. near Burradorgang, 28 April 1836, *T.L. Mitchell* (holo: CGE; iso: K, MEL).

Solanum leptophyllum F.Muell., Fragm. 2: 164 (1861). **Types:** between Mackenzie and Dawson Rivers, *F. Mueller* (syn: ?MEL, *n.v.*); Castlereagh River, *E. Bowman* (syn: ?MEL, *n.v.*); ad oppidulum Warwick, *H. Beckler* (syn: ?K, *n.v.*); Barrier Range, *H. Beckler* (syn: ?K, *n.v.*); Mt Murchison, *J. Dallachy* (syn: K, MEL).

Solanum ferocissimum var. *rectispinum* Domin, Biblioth. Bot. 89: 580 (1929). **Types:** Dividing Range near Jericho, Queensland, Mar 1910, *K. Domin* (syn: PR, *n.v.*); Peels Range, New South Wales, undated, *Frazer* (syn: BM, K, OXF, *fide* Symon (1981)); Peels Range, New South Wales, undated, *A. Cunningham* (syn: BM, *fide* Symon (1981)).

***Illustrations*:** Cunningham *et al.* (1981: 594); Symon (1981: 133)

Erect, rhizomatous perennial shrub, 0.4–1.5 m high. Juvenile branchlets with *c.* 20 prickles per dm; leaves (in outline) linear or linear-hastate, with basal lobes only; lamina 7–12 cm long, 0.8–1.2 cm wide. Adult branchlets white, grey or brown; prickles 15–60 per decimetre, straight, acicular, 2–10 mm long, 9–13 times longer than wide; stellae sparse to very dense, 0.25–0.4 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray absent or present, 0–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* linear, entire or with obtuse basal lobes only; lamina 3–7.5 cm long, 0.2–0.7 cm wide, 9–26 times longer than broad, apex obtuse or acute, base cuneate or hastate, oblique part 0–1 mm long, obliqueness index 0–2 percent; petioles 0.4–1 cm long, 8–20% length of lamina, prickles absent. *Upper leaf surface* green; prickles 2–6, straight, acicular, 2–9 mm long, prickles present on midvein only; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.4–0.8 mm apart, 0.25–0.35 mm across, sessile; lateral rays 4–8, porrect; central ray 0–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green to white or yellowish; prickles 0–4, straight, acicular, absent or present on midvein only; stellae sparse to very dense, 0.05–0.7 mm apart, 0.2–0.7 mm diameter, sessile; lateral rays 6–8, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–7 mm long,

rachis prickles absent; 2–10-flowered, strongly or weakly andromonoecious or with all flowers bisexual, flowers 4 or 5-merous; pedicels 6–13 mm long at anthesis, same thickness throughout, 0.2–0.4 mm thick at mid-point, prickles absent. Calyx tube 1–2 mm long, lobes deltate or rostrate, 0.7–1.5 mm long; prickles absent at anthesis; stellae moderate to very dense, yellow, 0.3–0.5 mm across, sessile, lateral rays 7 or 8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white or mauve, 6–12 mm long, deeply lobed, inner surface glabrous; anthers 3.5–5.5 mm long; ovary glabrous, or with stellate and Type 2 hairs; functional style 4.5–6.5 mm long, erect, glabrous or with stellate and Type 2 hairs, stellae *c.* 0.4 mm across, lateral rays 7 or 8, central ray 0.5–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–4 per inflorescence, globular, 6–9 mm diameter, red, glabrous or with a few scattered Type 2 hairs, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp *c.* 0.1 mm thick; pedicels 13–16 mm long in fruit, 0.5–0.6 mm thick at mid-point; seeds pale yellow, 3–3.6 mm long.

***Specimens examined*: Queensland.** BURKE DISTRICT: Southern Roads, 20 km N of Mt Isa, Dec 1996, *Barrs* SB93 (BRI). GREGORY NORTH DISTRICT: S of Selwyn, May 1963, *Gittins* 700 (BRI). MITCHELL DISTRICT: 'Oxenhope' on the Alroy road, *c.* 130 km SSW of Longreach, Apr 1989, *Emmott* 285 (BRI); Blacks Palace, 80 km S of Jericho, May 1989, *Cheffins* 377 (BRI). LEICHHARDT DISTRICT: *c.* 9 km SW of Anakie, Sep 1984, *Anderson* 3816 (BRI); Telecom road, 14 km E of Comet, Mar 1994, *Bean* 7524 & *Forster* (BRI). WARREGO DISTRICT: 'Gilruth Plains', Cunnamulla, Apr 1963, *McKee* 10347 (BRI); 19 km S of Charleville along road to Wyandra, Mar 1976, *Purdie* 215 & *Boyland* (BRI); 15.1 km S of Corona Creek, on Quilpie–Adavale road, Aug 1990, *Prendergast* HDP283 (BRI); Monks Tank road, Idalia N.P., Feb 2000, *Nicholls* SN010 (BRI). MARANOA DISTRICT: 'Boatman' Station, Mar 1947, *Everist* 2780 (BRI); 'Glade Villa', S of Roma, Aug 1990, *Warrian* CMW543 (BRI, NSW); *c.* 41 km along Shirlo road, NW of Bollon, Mar 2001, *Bean* 17540 (BRI, MEL); near 'Boxleigh', *c.* 60 km NE of St George, Apr 2001, *Bean* 17641 & *Pedley* (BRI, MO). DARLING DOWNS DISTRICT: Myall Park, 4 miles [6 km] NW of Glenmorgan, Apr 1960, *Johnson* 1605 (BRI); 5 miles [8 km] W of Westmar, Jul 1961, *Pedley* 788 (BRI); 'Coomrith' area near Meandarra, Jul 1969, *Webb* & *Tracey* 8298 (BRI); Yelarbon, around cemetery, *c.* 1 km from P.O., Oct 1983, *Canning* 5821 & *Rimes* (BRI, CANB, NSW); 2.0 km S of 'Wyaga', NE of Goondiwindi, Nov 1999, *Bean* 15868 (AD, BRI, MEL, NSW).

***Distribution and habitat*:** *Solanum ferocissimum* is distributed throughout much of inland Queensland south of about 20° latitude (**Map 9**), and extending well into New South Wales and Northern Territory. Also recorded by Symon (1981) for Western Australia. It inhabits stony ridges or flats, on red earths or loamy soil, in woodlands often dominated by *Eucalyptus populnea, E. melanophloia* or *Acacia aneura.*

***Phenology*:** Flowers and fruits may be found at any time of the year, probably in response to rainfall.

Notes: *S. ferocissimum* is close to *S. parvifolium* ssp. *parvifolium*, but differs by the often sparse, sessile indumentum; leaves linear in shape, frequently with a pair of basal leaf lobes, with prickles along the midrib on both surfaces; and by the seeds 3.0–3.6 mm long (1.9–2.3 mm long for *S. parvifolium* ssp. *parvifolium*).

Ross (1986) suggested that *S. ferocissimum* is doubtfully distinct from *S. parvifolium.* While it is true that some collections are taxonomically difficult, the great majority of collections may be easily determined.

***Conservation status*:** Widespread. Not considered at risk.

21. Solanum latens A.R.Bean **sp. nov.** Frutex parvus; aculei in ramulis frequentes, aciculares; folia adulta parva, 4.7–7plo longiora quam latiora, saepe lobata, aliquando integra; pili stellati in superficiebus ambabus folii sessiles, radio centrali radiis lateralibus 1.5–3plo longiore; corolla profunde lobata; calyx aculeis carens; fructus maturitate rubri, seminibus 1.6–2.3 mm longis. **Typus:** Queensland. BURNETT DISTRICT: Conservation Gully, 'Narayen', W of Mundubbera, 16 December 2001, *A.R. Bean* 18292 (holo: BRI (2 sheets + spirit); iso: AD, MEL, NSW).

Solanum sp. (Kingaroy A.R. Bean 17428) on BRI database

Erect, rhizomatous perennial shrub, 0.4–1.1 m high. Juvenile branchlets with 35–50 prickles per dm, 3–6 mm long; leaves (in outline) linear-hastate, shallowly to deeply lobed, with 1 or 2

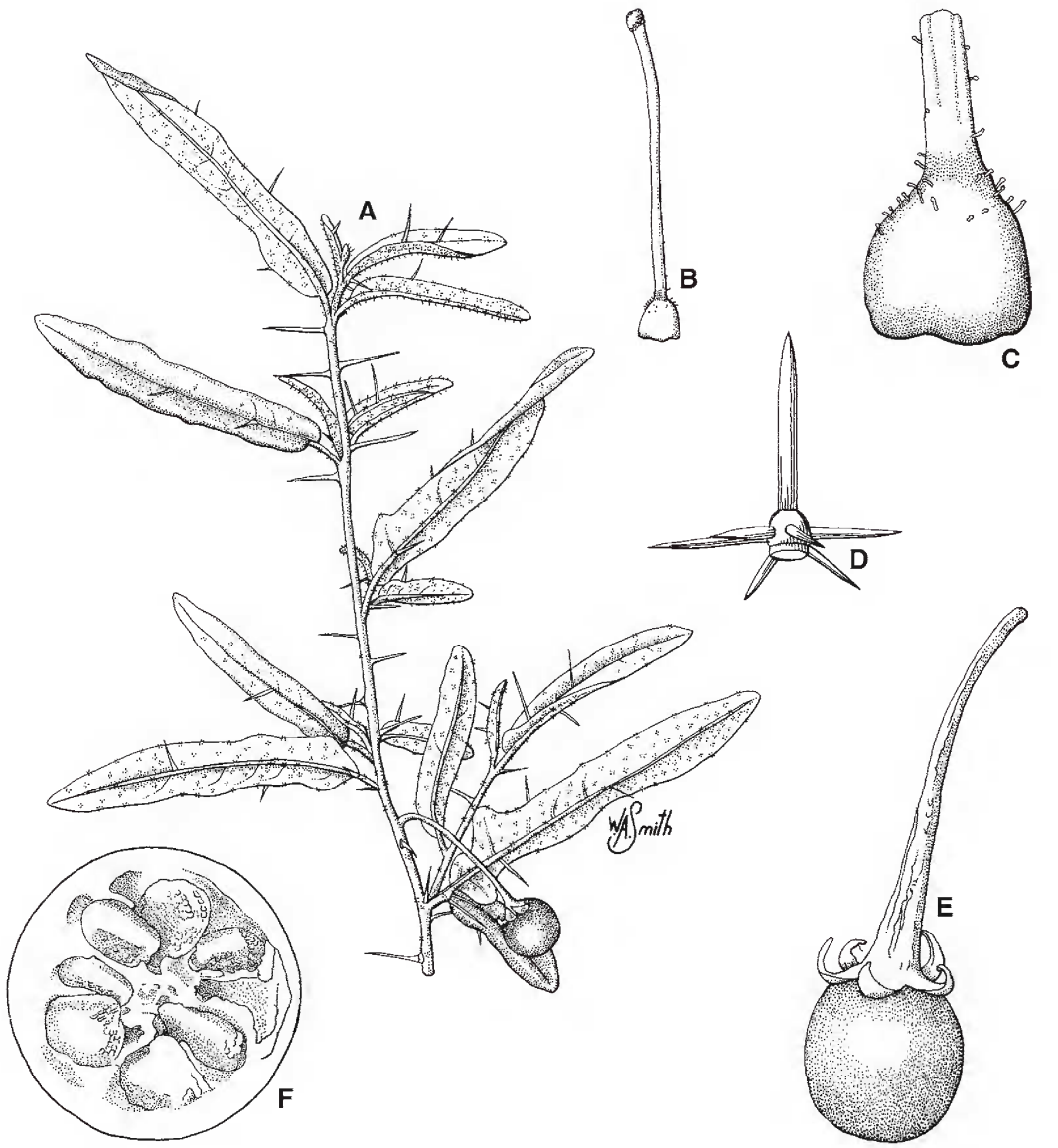

Fig. 21. ***Solanum latens***. A. fruiting branchlet × 1.2. B. style and ovary × 6. C. ovary showing Type 2 hairs × 30. D. stellate hair from upper leaf surface × 60. E. mature fruit and pedicel × 3. F. transverse section of fruit × 6. A, D–F, *Bean* 17432; B–C, *Bean* 18295.

pairs of lobes; lamina 2.5–4.5 cm long, 0.5–1.3 cm wide, with 9–16 prickles on upper surface. Adult branchlets green; prickles 15–30 per decimetre, straight, acicular, 5–9 mm long, 13–18 times longer than wide; stellae sparse, 0.25–0.5 mm diameter, sessile; lateral rays 4–7, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* narrow lanceolate or lanceolate, entire or shallowly lobed throughout or with basal lobes only; lobes 1 or 2 on each side, obtuse, lobing index 1–1.2; lamina 1.5–4.5 cm long, 0.3–0.8 cm wide, 4.5–7.5 times longer than broad, apex obtuse or acute, base cuneate or hastate, oblique part 0–2.5 mm long, obliqueness index 0–6 percent; petioles 0.3–0.6 cm long, 8–16% length of lamina, prickles absent. *Upper leaf surface* green; prickles 2–6, straight, acicular, 4–6 mm long, prickles present on midvein only; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.8–2.5 mm apart, 0.35–0.5 mm across, sessile; lateral rays 4–7, porrect; central ray 1.5–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 0–3, straight, acicular, absent or present on midvein only; stellae very sparse to moderate, 0.3–2 mm apart, 0.3–0.7 mm diameter, sessile; lateral rays 6–8, porrect; central ray 1.5–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle 0–2 mm long; 1–3-flowered, with all flowers bisexual and 5-merous; pedicels 8–18 mm long at anthesis, same thickness throughout, *c.* 0.3 mm thick at mid-point, prickles absent or present. Calyx tube 1.5–2 mm long, lobes attenuate, 1.5–2.5 mm long; prickles absent at anthesis; stellae sparse to moderate, transparent, 0.2–0.4 mm across, sessile, lateral rays 6–8, central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 6–8 mm long, deeply lobed, inner surface glabrous; anthers 3–4.5 mm long; ovary with Type 2 hairs only; functional style 4–6 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 4–6.5 mm diameter, red, glabrous or with a few scattered Type 2 hairs, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.2–0.3 mm thick; pedicels 14–24 mm long in fruit, 0.5–0.6 mm thick at mid-point; seeds pale yellow, 1.6–2.3 mm long. **Fig. 21.**

***Specimens examined*: Queensland.** Leichhardt District: 'Kooralbyn', *c.* 25 km S of Duaringa, Feb 2003, *Bean* 19985 (BRI, CANB, MO). Burnett District: Kingaroy, Apr 1947, *Smith* 3004 (BRI); *c.* 14 km NNE of Eidsvold, Oct 1993, *Lepschi & Slee* 1216 (BRI, CANB); Semgreen Road, SSE of Kingaroy, Mar 2001, *Bean* 17428 (BRI, CANB, MEL, NSW); Goodger Gully Rd, SSE of Kingaroy, Mar 2001, *Bean* 17432 (BRI, NSW); Kunioon West, S of Kingaroy, Nov 2001, *Bean* 18121 (BRI); Valley Dam paddock, 'Narayen', W of Mundubbera, Dec 2001, *Bean* 18295 (BRI, MEL, NSW); S.F.227, *c.* 30 km E of Cracow, Jul 2002, *Bean* 19129 (B, BRI, CANB, L, MEL); S.F.132 Allies Creek, *c.* 55 km S of Mundubbera, Nov 2002, *Bean* 19610 (BRI, MEL). Darling Downs District: Burraburri Creek, 16 km W of Durong, May 1992, *Forster* PIF9857 (AD, BRI); 3.8 km NE of Warra, on Marnhull road, Feb 2003, *Bean* 19961 (BRI, NSW).

***Distribution and habitat*:** *Solanum latens* is endemic to Queensland. It is confined to subcoastal south-eastern Queensland, extending from Duaringa to Warra, and near Kingaroy. (**Map 9**). It occurs as an understorey plant in Brigalow-Belah communities, or in microphyll vine forest, or in *Eucalyptus* or *Acacia* dominated woodland on tertiary-aged plateaux.

***Phenology*:** Flowers are recorded for February, May, November and December; mature fruits in May and December

***Notes*:** Closely related to *S. ferocissimum*, but differing by the smaller and broader leaves; juvenile leaves often with 2 pairs of lobes; upper and lower leaf stellae with central ray 1.5–3 times as long as laterals (0–1 times for *S. ferocissimum*); the 1–3 flowered inflorescences (2–10 flowered for *S. ferocissimum*); and the seeds 1.6–2.3 mm long (3.0–3.6 mm for *S. ferocissimum*).

***Conservation status*:** Moderately widespread. Not considered at risk.

***Etymology*:** From the Latin *latens* meaning 'secret' or 'hidden'. This is a reference to the late recognition of the species, with most collections being in the last decade.

22. Solanum dissectum Symon, Austrobaileya 4: 432–3 (1995). **Type:** Queensland. Port Curtis District: west of Thangool, 2 July 1959, *R.W. Johnson* 858 (holo: BRI; iso: BRI).

***Illustration*:** Symon (1995: 432)

Erect, rhizomatous perennial shrub, 0.3–0.8 m high. Juvenile branchlets with *c.* 7 prickles per dm, 7–10 mm long; leaves (in outline) ovate, deeply lobed, with 2–5 pairs of lobes; lamina 5.5–7 cm long, 3–4 cm wide, with 2–3 prickles on upper surface. Adult branchlets grey or brown; prickles 3–10 per decimetre, straight, acicular, 4–11 mm long, 9–13 times longer than wide; stellae absent; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, deeply lobed throughout; lobes 2–4 on each side, acute or obtuse, lobing index 7–22; lamina 2–5.5 cm long, 0.9–2.5 cm wide, 1.5–2.9 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–1.5 mm long, obliqueness index 0–5 percent; petioles 0.3–1.2 cm long, 12–25% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 0–4, straight, acicular, 1–7 mm long, prickles absent or present on midvein only; stellate hairs absent; finger hairs absent; Type 2 hairs present only in vein depressions. *Lower leaf surface* green; prickles 0–4, straight, acicular, absent or present on midvein only; stellae absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–2 mm long, rachis prickles absent; 2–5-flowered, with all flowers bisexual and 5-merous; pedicels 6–8 mm long at anthesis, markedly thicker distally, 0.4–0.5 mm thick at mid-point, prickles absent. Calyx tube 1–2 mm long, lobes rostrate, 1–2.5 mm long; prickles absent at anthesis; stellae absent; finger hairs absent; Type 2 hairs absent. Corolla mauve, 6–9 mm long, deeply lobed, inner surface glabrous; anthers 2.5–4 mm long; ovary with Type 2 hairs only; functional style 4–6.5 mm long, erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 7–9 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.2–0.3 mm thick; pedicels 10–19 mm long in fruit, 0.5–1 mm thick at mid-point; seeds pale yellow, 3–4.1 mm long.

***Specimens examined*: Queensland.** Leichhardt District: McCrae property, 50 miles [80 km] S of Duaringa, Jul 1966, *Everist & McDonald* 3 (BRI); Portion 2, Parish of Capayan, Banana Shire, Feb 1989, *Philips s.n.* (BRI); 'Nirvana', *c.* 15 km WNW of Banana, Apr 2003, *Bean* 20167 (BRI). Port Curtis District: *c.* 6 miles [10 km] W of Biloela, Jul 1959, *Johnson* 870 (BRI); Biloela near roadside, Sep 1966, *Stevens s.n.* (BRI); *c.* 22 km S of Dululu, Sep 1989, *Clamfield* 4776 (BRI).

***Distribution and habitat*:** *Solanum dissectum* is endemic to Queensland, and recorded from the Biloela–Banana–Baralaba area (**Map 11**). It occurs in association with brigalow (*Acacia harpophylla*), and sometimes *Eucalyptus thozetiana*, on heavy cracking-clay soil.

***Phenology*:** Poorly known. Flowers are recorded for September; mature fruits in February, April and July.

***Notes*:** *S. dissectum* is a very distinct species with no very close relatives. It is probably closest to *S. lythrocarpum* (see notes under that species). It is also close to *S. ferocissimum*, but it differs from that species by the total lack of stellate hairs and the deeply lobed adult leaves.

***Conservation status*:** *S. dissectum* is currently known from a total of 17 mature individuals at one locality, and this locality is not protected within a conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Critically Endangered" is recommended (CR A3ce; B1ab(iii,v)+2ab(iii,v); C1+2a(i,ii); D). Three specimen labels include comments indicating the probable imminent demise of that population of *S. dissectum viz.* "cleared Brigalow scrub", "pulled *Acacia harpophylla* regrowth", "recently burnt, pulled brigalow suckers". Major threats are continuing land clearance, and invasion of habitat by exotic species of grass, introduced as cattle fodder. This species is undoubtedly the one closest to extinction in Queensland.

23. Solanum lythrocarpum A.R.Bean **sp. nov.**

Frutex parvus, aculei in ramulis praesentes sed sparsi; folia integra, angusto-lanceolata, utrinque laete viridia; pili Type-2 in ramulis folii lamina calyceque; pili stellati in foliis et calyce sparsissimus; aculei calycis absentes; styli 5.7–6.8 mm longi; fructus maturitate rubra. **Typus:** Queensland. Burnett District: east of Scrubby Dam, Coominglah State Forest, near Monto, 11 December 1998, *A.R. Bean* 14430 (holo: BRI (1 sheet + spirit); iso: AD, MEL, NSW).

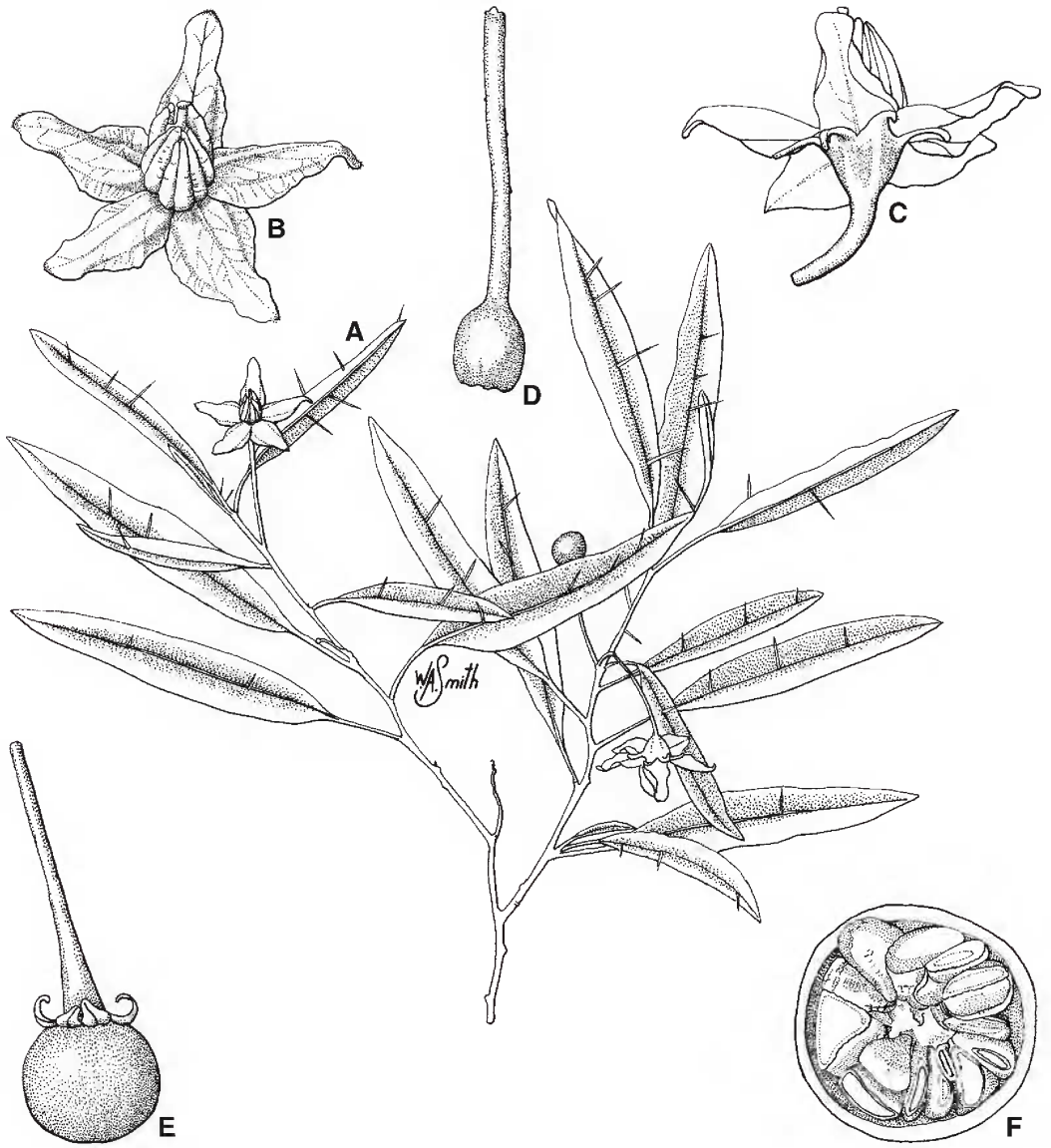

Fig. 22. ***Solanum lythrocarpum***. A. flowering and fruiting branchlet × 1. B. flower showing style and anthers × 3. C. flower showing hypanthium and calyx lobes × 3. D. ovary and style × 6. E. mature fruit and pedicel × 2. F. transverse section of fruit × 3. A, *Bean* 10389; B–D, *Bean* 14430; E–F, *Bean* 15936.

Solanum sp. (Coominglah A.R. Bean 10389) in Henderson (2002).

Erect, rhizomatous perennial shrub, 0.3–0.9 m high. Juvenile stage unknown. Adult branchlets brown; prickles absent or present, 0–6 per decimetre, straight, acicular, 0.5–5 mm long, 7–10 times longer than wide; stellae absent or sparse, 0.2–0.3 mm diameter, stalks 0–0.1 mm long; lateral rays 4–8, porrect; central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse to dense. *Adult leaves* narrow lanceolate or lanceolate, entire; lamina 5–9.5 cm long, 1.1–1.5 cm wide, 4.7–7 times longer than broad, apex acute, base cuneate, oblique part 0–2.5 mm long, obliqueness index 0–3 percent; petioles 0.9–2.1 cm long, 11–23% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 0–4, straight, acicular, 3–7 mm long, prickles absent or present on midvein only; stellate hairs absent, or confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs present throughout, 0.1–0.5 mm apart. *Lower leaf surface* green; prickles 0–3, straight, acicular, absent or present on midvein only; stellae absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, pseudo-racemose, common peduncle 0–7 mm long, rachis prickles absent; 3–8-flowered, with all flowers bisexual and 4 or 5-merous; pedicels 9–24 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.4–0.7 mm thick at mid-point, prickles absent. Calyx tube 1.5–2.5 mm long, lobes attenuate, 2–6 mm long; prickles absent at anthesis; stellae absent to sparse, white, 0.15–0.3 mm across, sessile, lateral rays 4–8, central ray 0–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla purple, 7–11 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 3–5 mm long; ovary glabrous, or with Type 2 hairs only; functional style 5.5–7 mm long, erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–4 per inflorescence, globular, 8–11 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.4–0.5 mm thick; pedicels 18–24 mm long in fruit, 0.6–0.8 mm thick at mid-point; seeds pale yellow, 3–3.7 mm long. **Fig. 22.**

***Specimens examined*: Queensland.** Burnett District: Sixteen Mile L.A., Coominglah S.F., south-west of Monto, Mar 1996, *Bean* 10155 (BRI); W edge of Bogdanoff L.A., Coominglah S.F., south-west of Monto, Jun 1996, *Bean* 10389 (BRI, NSW, MEL); northern boundary of S.F.132, S of Mundubbera, Nov 2002, *Bean* 19627 (BRI).

***Distribution and habitat*:** *Solanum lythrocarpum* is endemic to Queensland. It is known from two small areas near the towns of Monto and Mundubbera (**Map 10**). It grows on lateritised plateaux in ironbark-*Acacia blakei* forest with a dense shrubby understorey including some rainforest species. Associated species include *Croton insularis, Phebalium nottii, Bertya opponens* and *Philotheca ciliata*.

***Phenology*:** Flowers are recorded for June and December; mature fruits recorded for March, November and December.

***Notes*:** *S. lythrocarpum* is related to *S. dissectum*, but differs by the entire adult leaves (deeply lobed for *S. dissectum*); the presence of Type 2 hairs on the branchlets, leaf lamina and calyx (absent for *S. dissectum*); the presence of stellate hairs on leaves and calyx (absent for *S. dissectum*) and the fruiting pedicels 10–19 mm long (18–24 mm long for *S. dissectum*).

***Conservation status*:** *S. lythrocarpum* known from two localities, neither of which is within a conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU D1+2). In the Coominglah State Forest, less than 300 plants are known; 30–40 plants occur at the Mundubbera site.

***Etymology*:** From the Greek '*lythron*' meaning blood, and '*carpos*' (fruit), in reference to the bright-red colour of the mature fruits.

24. Solanum chenopodinum F.Muell., Fragm. 2: 165 (1861). **Type:** New South Wales. "Mount Murchison and Darling", undated, *J. Dallachy s.n.* (lecto: MEL [MEL 11705], *fide* Symon 1981).

***Illustrations*:** Cunningham *et al.* (1981: 594); Symon (1981: 149)

Erect, rhizomatous perennial shrub, 0.4–1 m high. Juvenile branchlets with *c.* 7 prickles per dm, *c.* 6 mm long; leaves (in outline) hastate,

shallowly-lobed or with basal lobes only, with 1 or 2 pairs of lobes; lamina 8–11.5 cm long, 4.5–6 cm wide, without prickles on upper surface. Adult branchlets white or grey or yellow; prickles absent or present, 0–10 per decimetre, straight or curved, broad-based, 2–7 mm long, 4–7 times longer than wide; stellae very dense, 0.2–0.5 mm diameter, stalks 0–0.2 mm long; lateral rays 7–10, porrect or ascending; central ray present, 0.2–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or triangular, with obtuse basal lobes only; lamina 2.5–6.5 cm long, 1.1–2.6 cm wide, 1.4–3 times longer than broad, apex obtuse or acute, base cuneate, obtuse, cordate or hastate, oblique part 0–4 mm long, obliqueness index 0–10 percent; petioles 0.5–2 cm long, 15–35% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.4–0.7 mm apart, 0.2–0.4 mm across, sessile; lateral rays 5–10, porrect; central ray 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae dense to very dense, 0.05–0.1 mm apart, 0.4–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 8–13, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–10 mm long, rachis prickles absent; 6–20-flowered, with all flowers bisexual and 5-merous; pedicels 4–6 mm long at anthesis, same thickness throughout, 0.5–0.7 mm thick at mid-point, prickles absent. Calyx tube 1.5–2 mm long, lobes deltate, 1–2.5 mm long; prickles absent at anthesis; stellae dense to very dense, white, 0.25–0.4 mm across, stalks 0–0.1 mm long, lateral rays 8–10, central ray 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 5–8 mm long, deeply lobed, inner surface glabrous; anthers 3.5–4.5 mm long; ovary glabrous; functional style 5.5–7 mm long, erect, glabrous. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 1–11 per inflorescence, globular, 7–8 mm diameter, red; mesocarp juicy, succulent; pedicels 8–12 mm long in fruit, 0.7–1 mm thick at mid-point; seeds pale yellow, 3.5–3.8 mm long.

***Specimens examined*: Queensland.** Gregory North District: 'Currawilla', Jun 1947, *Everist* 4025 (BRI); Spring Creek, 11 km S of 'Warra', Jun 1978, *Purdie* 1243 (BRI); Simpson Desert, *c.* 20 km NW of Pulchera Waterhole, Aug 1978, *Jahnke* 1310 (BRI); Warracoola Waterhole, Diamantina N.P., Apr 1995, *Mitchell* 951 (BRI); near Mistake Hut dam, Bladensberg N.P., S of Winton, Mar 1998, *Forster* PIF22228 & *Booth* (BRI). Gregory South District: Nockatunga, Jun 1936, *Blake* 11880 (BRI); Murungeri waterhole, 'Nappa Merrie' Station, Jun 1988, *Conrick* 2325 (AD, BRI).

***Distribution and habitat*:** *Solanum chenopodinum* is found in arid to semi-arid areas of south-west Queensland (**Map 11**). Also occurs widely in low rainfall parts of New South Wales, South Australia and Northern Territory. It occurs in shrubland on flats or watercourses on sandy or clayey soil.

***Phenology*:** Flowers are recorded in March, June and August; mature fruits from March to June.

***Notes*:** This species and *S. ferocissimum* are the only red-fruited *Solanum* species that occur in arid parts of Australia. Both species may have a hastate leaf base, but *S. chenopodinum* differs by the much broader leaves without prickles on the upper surface, the broad-based prickles on the branchlets, and the shorter fruiting pedicels.

***Conservation status*:** Data deficient.

25. Solanum dysprosium A.R.Bean **sp. nov.** Frutex; aculei ramuli leviter vel distincte recurvi; ramuli classibus duabus pilorum stellatorum, longitudine radii centralis differentibus; folia adulta 4 vel 5 paribus loborum non profundorum, petiolis aculeos gerentibus et longitudine 19–33% laminae aequantibus; stellae in pagina inferiore folii 0.5–0.8 mm diametro; digiti apicibus glandularibus in calyce praesentes. **Typus:** Queensland. Cook District: Cape Melville National Park, western slopes, 26 November 2001, *K.R. McDonald* 1026 & *H. Hines* (holo: BRI).

Erect, rhizomatous perennial shrub, *c.* 0.75 m high. Juvenile stage unknown. Adult branchlets mauve or brown; prickles 25–50 per decimetre, straight, acicular, 3–8 mm long, 9–12 times longer than wide; stellae sparse, 0.25–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays

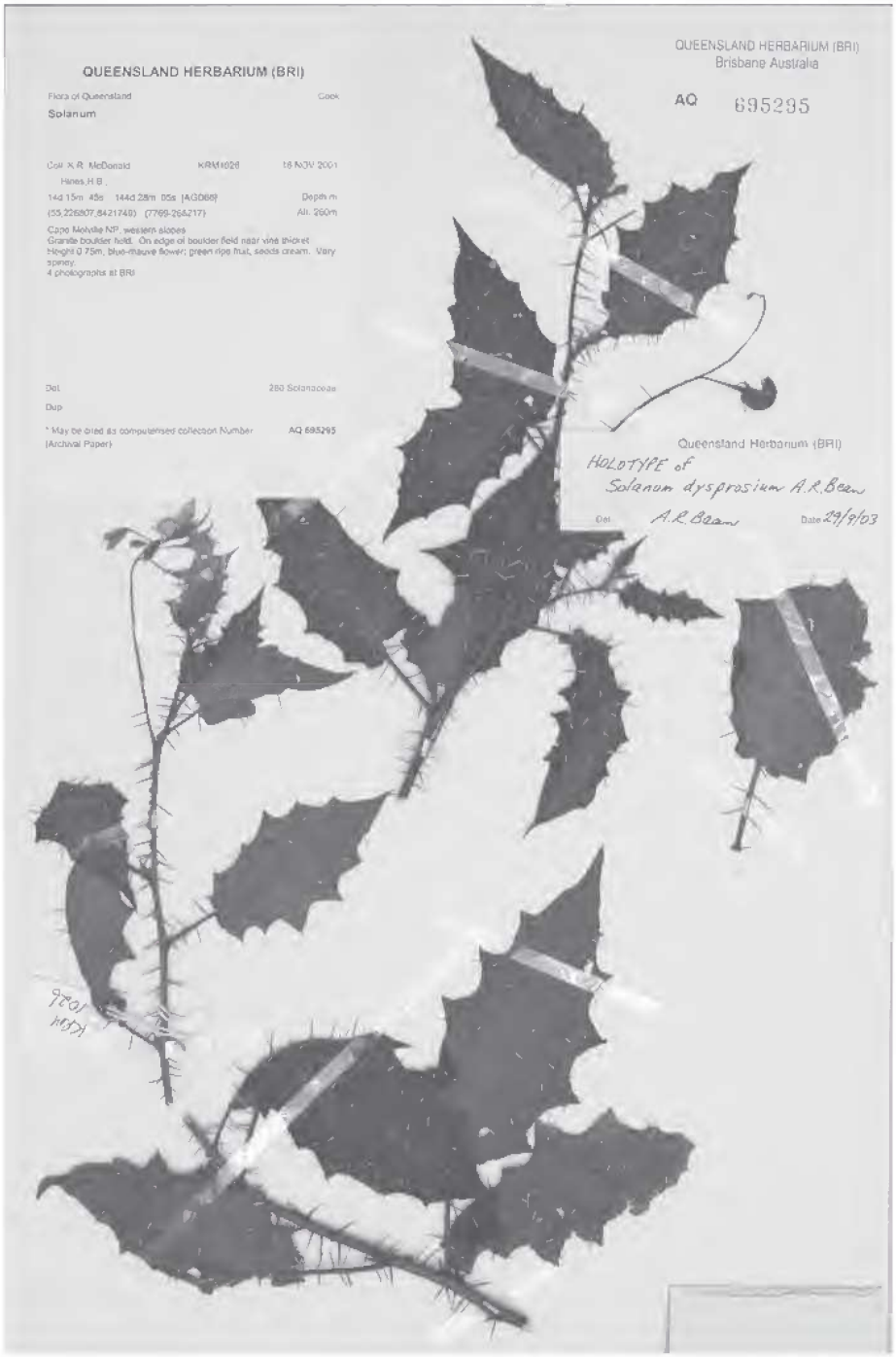

Fig. 23. Holotype of ***Solanum dysprosium***.

4–8, porrect; central ray absent or present, 0–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* ovate, shallowly lobed throughout; lobes 4 or 5 on each side, acute, lobing index 1.3–1.6; lamina 7–10.5 cm long, 3.5–5 cm wide, 1.9–2.2 times longer than broad, apex acute or acuminate, base obtuse, oblique part 0–5 mm long, obliqueness index 0–6 percent; petioles 1.3–3.5 cm long, 20–35% length of lamina, prickles present. *Upper leaf surface* green; prickles 30–50, straight, acicular, 2–8 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae sparse, 0.5–0.8 mm apart, 0.25–0.5 mm across, sessile; lateral rays 4 or 5, porrect; central ray 0.5–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 11–17, straight, acicular, present on midvein and lateral veins; stellae moderate, 0.4–0.8 mm apart, 0.5–0.8 mm diameter, sessile; lateral rays 4–6, porrect; central ray 0–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 17–35 mm long, rachis prickles present; 12–15-flowered, flowers 5-merous; pedicels 8–11 mm long at anthesis, same thickness throughout, 0.3–0.6 mm thick at mid-point, prickles absent. Calyx tube 2–2.5 mm long, lobes attenuate, 2–3.5 mm long; prickles absent at anthesis; stellae sparse, transparent, 0.15–0.2 mm across, sessile, lateral rays 4 or 5, central ray 1–2 times as long as laterals, not gland-tipped; finger hairs abundant; Type 2 hairs absent. Corolla purple, 10–14 mm long, shallowly or deeply lobed; anthers 5–5.8 mm long; functional style erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, *c.* 7 mm diameter; pedicels *c.* 15 mm long in fruit, *c.* 0.7 mm thick at mid-point; seeds pale yellow, 2.5–3 mm long. **Fig. 23.**

***Specimen examined*: Queensland.** Cook District: Cape Melville N.P., western slopes, Nov. 2001, *McDonald* 1026 & *Hines* (BRI).

***Distribution and habitat*:** *Solanum dysprosium* is endemic to Queensland. Confined to Cape Melville on Cape York Peninsula (**Map 9**), it grows on the edge of a granite boulder-field, adjacent to vine thicket.

***Notes*:** Closely related to *S. inaequilaterum*, but differing by the smaller leaves, petioles 20–35% of lamina length, and bearing prickles (petioles 10–22%, without prickles for *S. inaequilaterum*), stellae on lower leaf surface 0.5–0.8 mm diameter (0.3–0.5 mm diameter for *S. inaequilaterum*), common peduncle present (absent for *S. inaequilaterum*), calyx lobes 2–3.5 mm long (4–9 mm for *S. inaequilaterum*).

***Conservation status*:** Data deficient.

***Etymology*:** from the Greek *dysprositos*, meaning hard to get at. This is a reference to the difficulty in accessing the Cape Melville area, where the species is endemic.

26. Solanum inaequilaterum Domin, Biblioth. Bot. 89: 581-582 (1929). **Type:** Queensland. Moreton District: Beechmont, March 1910, *K. Domin s.n.* (holo: ?PR), *n.v.*

***Illustration*:** Symon (1981: 244)

Erect, rhizomatous perennial shrub, 1–3.5 m high. Juvenile branchlets with 120–400 prickles per dm, 1.5–6 mm long; leaves (in outline) elliptical or ovate, deeply lobed, with 2–4 pairs of lobes; lamina 16–24 cm long, 9–14 cm wide, with 100–150 prickles on upper surface. Adult branchlets mauve or brown; prickles 5–55 per decimetre, straight, acicular, 2–9 mm long, 10–14 times longer than wide; stellae sparse, 0.4–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 4–8, porrect; central ray absent or present, 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, shallowly lobed throughout; lobes 3–5 on each side, acute, lobing index 1.1–1.8; lamina 9.5–19 cm long, 3.5–7.5 cm wide, 2.3–2.7 times longer than broad, apex acute or acuminate, base cuneate or obtuse, oblique part 0–18 mm long, obliqueness index 0–9 percent; petioles 1.1–2.2 cm long, 10–22% length of lamina, prickles absent. *Upper leaf surface* green; prickles 8–40, straight, acicular, 3–11 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae very sparse to sparse, 0.8–1.4 mm apart, 0.4–0.5 mm across, sessile; lateral rays 4–8, porrect; central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower*

leaf surface green; prickles 0–9, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae sparse to moderate, 0.5–1.3 mm apart, 0.3–0.5 mm diameter, sessile; lateral rays 4–8, porrect; central ray 0.3–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle absent, rachis prickles absent; 4–13-flowered, weakly andromonoecious, flowers 5-merous; pedicels 7–24 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.5–1 mm thick at mid-point, prickles absent. Calyx tube 1–3 mm long, lobes attenuate, 4–9 mm long; prickles absent at anthesis; stellae sparse to moderate, yellow, 0.15–0.25 mm across, sessile, lateral rays 5–8, central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs present; Type 2 hairs absent. Corolla white or purple, 8–15 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 4.5–6 mm long; ovary with Type 2 hairs only; functional style 7.5–8.5 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–4 per inflorescence, globular or ellipsoidal, 11–13 mm diameter, red, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.4–0.5 mm thick; pedicels 26–38 mm long in fruit, 0.6–2 mm thick at mid-point; seeds pale yellow, 2.6–3.4 mm long. *Gin's Whiskers.*

***Specimens examined*: Queensland.** Moreton District: Roberts Plateau, Lamington N.P., May 1929, *White* 6074 (BRI); Levers Plateau, Apr 1972, *Henderson* H1286 (BRI); beside track at Mt Nothofagus, Sep 1973, *Lander* 336 (BRI, NSW); 0.5 km along Duck Creek road, near O'Reilly Guest House, Dec 1999, *Bean* 15896 (AD, BRI, MEL, NSW); near Best of All Lookout, Springbrook, Mar 2000, *Forster* PIF25385 & *Booth* (A, BRI, MEL, QRS). **New South Wales.** North Coast: Coopers Creek, via Mullumbimby, Aug 1936, *White* 10456 (BRI); Victoria Park, 5 miles [8 km] S of Alstonville, Feb 1971, *O'Hara & Coveny* 3491 (BRI, NSW); summit of Mt Nardi, NE of Nimbin, Feb 2000, *Bean* 16021 (BRI, NSW); Big Scrub Flora Reserve, *c.* 20 km N of Lismore, Dec 2000, *Bean* 17073 (BRI); off Dingo Flat road, Clouds Creek S.F., N of Dorrigo, Jan 2001, *Bean* 17264 (BRI, NSW).

***Distribution and habitat*:** *Solanum inaequilaterum* extends from Springbrook and Lamington National Park in Queensland, to Dorrigo in N.S.W. (**Map 11**). It grows in notophyll rainforest in high rainfall areas. Altitude is often above 750 metres. It is one of the few species that will flower and fruit under very low-light conditions.

***Phenology*:** Flowers are recorded from November to April; fruits may be found throughout the year.

***Notes*:** Closely related to *S. dysprosium* (see Notes under that species). Less closely related to *S. semiarmatum*, with which it shares the deeply lobed juvenile leaves, dense prickles on stems of juvenile plants, and the succulent 1-locular fruit.

In 1920, Georg Bitter made the combination *Lycianthes inaequilatera* (Rusby) Bitter for a Bolivian species, based on *Bassovia inaequilatera* Rusby in Mem. Torrey Bot. Club 6: 90 (1896). He included the notation "*Solanum inaequilaterum* Rusby in sched.", but that combination was never actually published. Since *S. inaequilaterum* Rusby is a *nomen nudum*, it follows that *S. inaequilaterum* Domin is a legitimate name.

The type of *S. inaequilaterum* was sought from PR, but not received. Symon (1981) stated that he had not seen the type. It is possible that the type is missing, but the designation of a neotype is not warranted until further searches are made. The application of the name is not in doubt, as the species is well described in the protologue.

***Conservation status*:** Not considered at risk.

Group 13A (S. semiarmatum group), here defined; related to Group 13 (*S. ferocissimum* group) of Whalen (1984).

Mature fruits globular, black, juicy, 1-locular, <12 mm diameter, exocarp <0.5 mm thick (100%); Type 2 hairs present on branchlets (100%); inflorescences with flowers all bisexual (100%); branchlet prickles abundant (240–1400 per decimetre), acicular (100%); mixture of unbranched and branched inflorescences (100%); corolla inner surface glabrous (100%); fruiting calyx less than half length of mature fruit (100%); adult leaves deeply or shallowly lobed (83%).

3 species endemic to Australia; 3 species in Queensland.

27. Solanum coracinum Symon, Austrobaileya 4: 429–30 (1995). **Type:** Queensland. Darling Downs District: *c.* 22 km east of Yuleba, on road to Miles, 17 November 1975, *R.J. Henderson* 2381 (holo: BRI; iso: AD).

Solanum sp. 3 in Ross (1986)

***Illustration*:** Symon (1995: 430)

Erect, rhizomatous perennial shrub, 0.7–1.5 m high. Juvenile stage unknown. Adult branchlets green; prickles 350–800 per decimetre, straight, acicular, 1–10 mm long, 14–18 times longer than wide; stellae absent or sparse, 0.3–0.5 mm diameter, sessile; lateral rays 4–6, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* broadly ovate or orbicular, deeply lobed throughout; lobes 3–5 on each side, acute, lobing index 2–25; lamina 5–11.5 cm long, 3.5–10 cm wide, 1.1–1.5 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–7 mm long, obliqueness index 0–9 percent; petioles 2–3.4 cm long, 25–35% length of lamina, prickles absent. *Upper leaf surface* green; prickles 15–100, straight, acicular, 1–10 mm long, prickles present on midvein and lateral veins; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse, 0.9–7.5 mm apart, 0.3–0.45 mm across, sessile; lateral rays 4–8, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 10–30, straight, acicular, present on midvein and lateral veins; stellae absent or very sparse, 0.8–3.2 mm apart, 0.45–0.6 mm diameter, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose or 2-branched, common peduncle 18–39 mm long, rachis prickles present; 14–30-flowered, with all flowers bisexual and 5-merous; pedicels 4–8 mm long at anthesis, same thickness throughout, 0.3–0.4 mm thick at mid-point, prickles absent. Calyx tube 1.5–2.5 mm long, lobes deltate or rostrate, 1.5–3 mm long; prickles absent at anthesis; stellae moderate, transparent, 0.25–0.4 mm across, sessile, lateral rays 6–8, central ray 0.7–1.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla purple, 7–9 mm long, deeply lobed, inner surface glabrous; anthers 4–5.5 mm long; ovary with Type 2 hairs only, or with stellate and Type 2 hairs; functional style 4.5–6.5 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 3–9 per inflorescence, globular, 6–9 mm diameter, black, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.15–0.3 mm thick; pedicels 4–10 mm long in fruit, 0.5–0.8 mm thick at mid-point; seeds pale yellow, brown or black, 2.1–2.8 mm long.

***Specimens examined*: Queensland.** Leichhardt District: 19 km W of Wandoan, Aug 1999, *Cook s.n.* (BRI). Darling Downs District: 'Palardo', May 1934, *Blake* 5866 (BRI); 10 miles [16 km] E of Texas, Jun 1951, *Everist* 2539 & *Webb* (BRI); 'Shellbourne', *c.* 20 miles [32 km] NE of Miles, May 1960, *Johnson* 1630 (BRI); E of Combididan Farm, 'Cypress Downs', Sep 1961, *Jones* 164 (BRI); 'Benandre', 23 miles [37 km] SE of Texas, Apr 1962, *Pedley* 988 (BRI); 20 km W of Milmerran, Feb 1984, *Stower* (BRI); Houston–Gillespie Dam road, N of Grays Gate, Dec 1999, *Menkins* DDP8 (BRI); 2.6 km E of Arcot, ENE of Texas, May 2000, *Bean* 16657 (BRI, NSW); Road 105, 7 km S of Milmerran, May 2003, *Bean* 20305 (BRI); Road 59, SE of Milmerran, May 2003, *Bean* 20333 (BRI);

***Distribution and habitat*:** *Solanum coracinum* is endemic to Queensland, extending from Wandoan to Texas (**Map 10**), but not yet recorded for New South Wales. It inhabits open forest dominated by brigalow or belah, or shrubby eucalypt woodland with *Callitris*. Soils may be sandy-loams to clays.

***Phenology*:** Flowers are recorded from February to May and from August to December; mature fruits recorded from April, May, June and December.

***Notes*:** *S. coracinum* is closely related to *S. mitchellianum*, differing by the glabrous to sparsely pubescent branchlets and leaf undersides, the deeply lobed leaves with more prickles on the upper surface, and the stellae of the lower leaf surface with a shorter central ray. Three specimens (*Bean* 17776, Thomby Range; *Beasley s.n.*, Chinchilla; and *Fensham* 2877, NNW of Miles) appear to represent intergrades between it and *S. mitchellianum*. *S. mitchellianum* occurs to the east, west and north of the geographical range of *S. coracinum*.

***Conservation status*:** *S. coracinum* is known from seven localities, none of which is within a conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU A4ce; B1ab(iii)+2ab(iii)).

28. Solanum mitchellianum Domin, Repert. Spec. Nov. Regni Veg. 12: 131 (1913). **Type:** Subtropical New Holland, *anno* 1846, *T. Mitchell* (lecto: K; isolecto: BM, L), *fide* Symon (1981).

***Illustration*:** Symon (1981: 127), as *S. semiarmatum.*

Erect, rhizomatous perennial shrub, 0.5–1.8 m high. Juvenile branchlets with 240–1400 prickles per dm; leaves (in outline) ovate, deeply lobed, with 3 or 4 pairs of lobes; lamina *c.* 11.5 × 8 cm, with *c.* 40 prickles on upper surface. Adult branchlets terete or ridged, green; prickles 240–1400 per decimetre, straight, acicular, 1–10 mm long, 14–20 times longer than wide; stellae dense, 0.4–0.7 mm diameter, stalks 0–0.15 mm long; lateral rays 6–8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* ovate, entire or shallowly lobed throughout; lobes 3 or 4 on each side, acute or obtuse, lobing index 1–1.9; lamina 5.5–10.5 cm long, 1.8–6.5 cm wide, 1.5–3 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–3.5 mm long, obliqueness index 0–5 percent; petioles 1.1–2.8 cm long, 18–30% length of lamina, prickles present. *Upper leaf surface* green; prickles 8–20, straight, acicular, 1–8 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse to moderate density, 1–3 mm apart, 0.25–0.7 mm across, stalks 0–0.1 mm long; lateral rays 4–8, porrect; central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present only in vein depressions. *Lower leaf surface* white; prickles 2–10, straight, acicular, present on midvein only or present on midvein and lateral veins; stellae very dense, *c.* 0.05 mm apart, 0.5–0.8 mm diameter, stalks 0–0.3 mm long; lateral rays 7–9, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose or 2–3-branched, common peduncle 21–40 mm long, rachis prickles present; 7–25-flowered, with all flowers bisexual and 5-merous; pedicels 3–6 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.3–0.6 mm thick at mid-point, prickles absent or present. Calyx tube 0.5–1.5 mm long, lobes hemispherical, deltate or attenuate, 2–3.5 mm long; prickles absent at anthesis; stellae moderate to dense, transparent, 0.25–0.5 mm across, sessile, lateral rays 5–8, central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–10 mm long, deeply lobed, inner surface glabrous; anthers 3.5–5.5 mm long; ovary glabrous or with stellate hairs only; functional style 6.5–8.5 mm long, erect, glabrous or with stellate hairs only, stellae *c.* 0.4 mm across, lateral rays *c.* 8, central ray *c.* 1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 7–17 per inflorescence, globular, 8–9 mm diameter, black, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.1–0.2 mm thick; pedicels 8–10 mm long in fruit, 0.8–0.9 mm thick at mid-point; seeds brown to black, 1.8–2.4 mm long.

***Selected specimens examined*: Queensland.** Leichhardt District: Moolyamba Gorge, Carnarvon Ranges, Sep 1940, *White* 11361 (BRI); 'Rosedale' near Baralaba, Sep 1959, *Johnson* 917 (BRI); Pegunny North, *c.* 55 km W of Moura, May 1962, *Johnson* 2289 (BRI); Injune–Rolleston road, *c.* 77 km from Injune, Sep 1974, *Moriarty* 1558 (BRI, CANB); Little St Peter, 10 miles [16 km] N of Springsure, Sep 1985, *O'Keeffe* 783 (BRI); Nathan Gorge, SW of Cracow, Aug 1990, *Forster* PIF7188 (BRI, MEL); Bunbuncundoo Spring, Ka Ka Mundi N.P., Sep 1993, *Purdie* 4339 (BRI, CANB); Auburn Range S.F., Jun 1996, *Bean* 10338 (BRI, MEL, NSW); 14.8 km along Arcturus Road, NE of Springsure, Oct 1998, *Bean* 14009 (BRI); Expedition N.P., Amphitheatre section, Nov 1998, *Forster* PIF23862 & *Booth* (AD, BRI, K, MEL, NSW, QRS); Zamia Creek, Palmgrove N.P., Sep 2000, *Forster* PIF26109 *et al.* (AD, BRI, MEL); Brigalow Research Station, SW of Moura, Dec 2001, *Bean* 18256 (BRI, MEL). Port Curtis District: Callide Valley, Apr 1937, *White* 11184 (BRI). Warrego District: 'Carnarvon' Station, Mar 2001, *Fensham* 4225 (BRI). Maranoa District: Kenniff Lookout, *c.* 80 km SW of Rolleston, Jun 1977, *Crisp* 3084 (AD, BRI, CANB); 'Stanhope Downs', *c.* 44 km by road NW of Roma on Orallo Road, Dec 1997, *Thomas* 1267 (BRI). Burnett District: Dingo Trap track, 'Narayen', Dec 1973, *Leach* N1496 (BRI); Monogorilby, Mundubbera shire, Jan 1982, *Forster* 1105 (BRI). Darling Downs District: Chinchilla, Jul 1912, *Beasley* 3 (BRI); 'Wyaga', Goondiwindi district, Sep 1919, *White s.n.* (BRI); Cooranga North, Apr 1925, *White* 2490 (BRI); 'Calala', *c.* 10 miles [16 km] E of Meandarra, Apr 1960, *Johnson* 1620 (BRI); 2.5 km SSW of Gladfield, Jun 1986, *Forster* PIF2474 *et al.* (BRI). **New South Wales.** North West Slopes: 7 miles [11 km] from Crooble on Warialda road, Sep 1950, *Roe* 258 (CANB); 7.5 km NW of North Star, Sep 1988, *Moore* 8689

(BRI, CANB); 'Warivan', 7.4 km from North Star on road to Warialda, Sep 1988, *Moore* 8835 (CANB).

***Distribution and habitat*:** *Solanum mitchellianum* extends from Springsure and Blackwater in Queensland to Warialda in New South Wales (**Map 12**). It inhabits semi-evergreen vine thickets, brigalow-belah communities or shrubby eucalypt woodlands often with rock outcrops.

***Phenology*:** Flowers are recorded for all months of the year; mature fruits are recorded between September and April.

***Notes*:** Closely related to *S. semiarmatum*, and for many years included in synonymy with it. *S. mitchellianum* is however amply different by virtue of the shallowly lobed or entire adult leaves, stellae on the lower leaf surface sessile or with stalks <0.3 mm long, ovary glabrous or with stellae only (with Type 2 hairs only for *S. semiarmatum*), styles glabrous or with stellae (with Type 2 hairs only for *S. semiarmatum*), and calyx prickles absent (present for *S. semiarmatum*). It is also close to *S. coracinum* (see notes under that species).

***Conservation status*:** Widespread. Not considered at risk.

29. Solanum semiarmatum F.Muell., Fragm. 2: 163 (1861). **Type:** New South Wales. North Coast: Clarence River, undated, *H. Beckler* (holo: MEL [MEL12130]; iso: K, NSW).

***Illustration*:** Symon (1981: 126)

Erect, rhizomatous perennial shrub, 1.5–3 m high. Juvenile branchlets with 600–1400 prickles per dm, 0.5–7 mm long; leaves (in outline) ovate, deeply lobed, with 4 or 5 pairs of lobes; lamina *c.* 16 × 10 cm, with *c.* 70 prickles on upper surface. Adult branchlets green; prickles 600–1400 per decimetre, straight, acicular, 1–13 mm long, 15–20 times longer than wide; stellae sparse to dense, 0.5–0.8 mm diameter, stalks 0–1.5 mm long; lateral rays 4–8, porrect; central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* ovate or broadly ovate, deeply lobed throughout; lobes 3 or 4 on each side, acute or obtuse, lobing index 2–7; lamina 7–17 cm long, 3.5–10 cm wide, 1.5–1.9 times longer than broad, apex acute, base obtuse or cordate, oblique part 1.5–8 mm long, obliqueness index 2–7 percent; petioles 1.7–4.5 cm long, 20–40% length of lamina, prickles present. *Upper leaf surface* green; prickles 7–70, straight, acicular, 1–10 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae sparse or moderate density, 0.4–0.8 mm apart, 0.15–0.4 mm across, sessile; lateral rays 4–6, ascending; central ray 0.7–1.2 times as long as laterals, not gland-tipped; finger hairs present, 0.1–0.8 mm apart, not gland-tipped, 0.1–0.15 mm long; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 35–200, straight, acicular, present on midvein and lateral veins; stellae dense to very dense, 0.05–0.1 mm apart, 0.5–0.8 mm diameter, stalks 0–2.5 mm long; lateral rays 6–8, porrect; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose or 2-branched or 3-branched, common peduncle 7–30 mm long, rachis prickles present; 10–30-flowered, with all flowers bisexual and 5-merous; pedicels 3–10 mm long at anthesis, same thickness throughout, 0.5–0.7 mm thick at mid-point, prickles present. Calyx tube 1–2 mm long, lobes deltate or attenuate, 1–3 mm long; prickles absent or present at anthesis, 0–25 per flower, 0.5–2 mm long; stellae dense, transparent, 0.6–0.8 mm across, stalks 0–1.2 mm long, lateral rays 5–7, central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla purple, 10–12 mm long, deeply lobed, inner surface glabrous; anthers 3.5–5.5 mm long; ovary with Type 2 hairs only; functional style 7–9 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 0.5–3 mm long. Mature fruits 4–9 per inflorescence, globular, 10–12 mm diameter, black, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp juicy, succulent; exocarp 0.1–0.2 mm thick; pedicels 8–14 mm long in fruit, 1.2–1.4 mm thick at mid-point; seeds pale yellow, 2–2.8 mm long. *Gin's Whiskers.*

Selected specimens examined: **Queensland.** Darling Downs District: Wilsons Peak, May 1933, *Michael s.n.* (BRI); 6 km from Mt Colliery towards Gambubal S.F., E of Warwick, Apr 1999, *Bean* 14802 (BRI, MEL); Killarney–The Head road, 7.1 km NE of Queen Mary Falls, Jan 2002, *Bean* 18332 (BRI, MEL, NSW). Moreton District: Mt Mistake, Jun 1887, *Simmonds* (BRI); Mt Lindesay, Oct 1921,

White s.n. (BRI); Beech Mountain, Apr 1923, *White* 1927 (BRI); Roberts Plateau, Lamington N.P., May 1929, *White* 6072 (BRI); Levers Plateau, *c.* 90 km SSW of Brisbane, Apr 1972, *Henderson* H1298 (BRI); 3.3 km along Duck Creek Road, near O'Reilly's Guest House, Mar 2001, *Bean* 17388 (BRI). **New South Wales.** NORTH COAST: Toonumbar S.F., *c.* 26 km NW of Kyogle, Feb 1972, *Henderson* H1260A & *Parham* (BRI); lower slopes of Mt Lindesay, 7 miles [11 km] ENE of Woodenbong, Sep 1972, *Coveny* 4544 & *Rodd* (BRI, NSW); Old Grevillea–Bundgeam road, 25 km NW of Kyogle, Dec 1977, *Haegi* 1538 (BRI, NSW).

***Distribution and habitat*:** *Solanum semiarmatum* is found along the "scenic rim" of south-eastern Queensland, from Lamington N.P. to Mt Mistake, and adjacent areas of New South Wales south to Kyogle (**Map 10**). It inhabits open areas within or on the margins of tall notophyll rainforest, at altitudes generally above 800 metres.

***Phenology*:** Flowers are recorded from September to May; mature fruits are recorded from January to May.

***Notes*:** Closely related to *S. mitchellianum* (see notes under that species).

***Conservation status*:** Not considered at risk.

Group 14 (S. torvum group) of Whalen (1984)

Large shrubs; prickles broad-based, sparse on large stems and branchlets (100%); adult leaves entire or shallowly lobed, broadly ovate, 7.5–26 cm long; upper leaf surface without prickles, protostellae present (100%); inflorescence 2–many branched, with 15–65 flowers (100%); calyx prickles absent (100%); corolla deeply lobed, white (100%); ovary with Type 2 hairs only (100%); mature fruits yellowish-green (100%).

About 50 species, mainly in montane areas of the neotropics, but with a few species in Malesia; 2 species naturalised in Queensland.

30. *Solanum chrysotrichum Schltdl., Linnaea 19: 304 (1847). **Type:** near Las Trojes, Mexico, 1825–31, *C.J.W. Schiede* 81 (holo: HAL, *fide* Welman (2003)), *n.v.*

[*S. hispidum auct. non* Persoon]

***Illustrations*:** Symon (1981: 114), as *S. hispidum;* Welman (2003: 6).

Erect, rhizomatous perennial shrub, 1.5–4 m high. Juvenile branchlets with *c.* 15 prickles per dm, 3–6 mm long; leaves (in outline) broadly ovate, shallowly to deeply lobed, with 5 or 6 pairs of lobes; lamina 23–41 cm long, 16–40 cm wide, with 10–30 prickles on upper surface. Adult branchlets brown; prickles 0–20 per decimetre, curved, broad-based, 1–4 mm long, 2–3 times longer than wide; stellae sparse to dense, 0.5–0.6 mm diameter, stalks 0.1–1 mm long; lateral rays 6–8, porrect; central ray absent or present, 0–0.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* broadly ovate, shallowly lobed throughout; lobes 3–5 on each side, acute or obtuse, lobing index 1.2–2.1; lamina 12–26 cm long, 9–19 cm wide, 1.3–1.9 times longer than broad, apex acute or acuminate, base cuneate, obtuse or cordate, oblique part 0–12 mm long, obliqueness index 0–5 percent; petioles 2–6.3 cm long, 11–25% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles absent; stellate hairs distributed throughout; protostellae present; ordinary stellae sparse, 0.3–0.6 mm apart, 0.2–0.6 mm across, sessile; lateral rays 5–8, porrect; central ray 0.2–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green or yellowish; prickles 0–3, straight or curved, broad-based, prickles absent or present on midvein only; stellae moderate to dense, 0.3–0.5 mm apart, 0.4–0.6 mm diameter, stalks 0–0.3 mm long; lateral rays 6–8, porrect; central ray 0.1–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed or supra-axillary, 3 or 4-branched, common peduncle 6–18 mm long, rachis prickles absent; 13–65-flowered, weakly andromonoecious, flowers 5-merous; pedicels 3–13 mm long at anthesis, markedly thicker distally, 0.7–0.9 mm thick at mid-point, prickles absent. Calyx tube 2–4 mm long, lobes rostrate or attenuate, 4.5–10 mm long; prickles absent at anthesis; stellae dense to very dense, brown or rusty, 0.3–0.9 mm across, stalks 0–1 mm long, lateral rays 7–9, central ray 0.2–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white, 14–20 mm long, deeply lobed, inner surface sparsely stellate-hairy; anthers 6–9 mm

long; ovary with Type 2 hairs only; functional style 10–13.5 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 7–37 per inflorescence, globular, 14–17 mm diameter, yellowish-green, 2–3-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.5–0.8 mm thick; pedicels 11–21 mm long in fruit, 1.4–1.8 mm thick at mid-point; seeds pale yellow, 2.5–2.7 mm long. *Giant Devil's Fig.*

***Specimens examined*: Queensland.** BURNETT DISTRICT: Tarong Power station site, 15 km S of Nanango, Nov 1996, *Skillington s.n.* (BRI). WIDE BAY DISTRICT: Conondale Range, S.F.274, Oct 1982, *McDonald* 3626 & *Williams* (BRI); Currymore, NW of Maleny, Apr 1993, *Bean* 6014 (BRI). MORETON DISTRICT: Wooloowin-Windsor etc. (Brisbane), May 1917, *White s.n.* (BRI); Ferny Grove near Brisbane, Nov 1934, *White s.n.* (BRI); Joseph Cresent, Deception Bay, Sep 1980, *Dillewaard* 61 & *Olsen* (BRI); Samford, Sep 1984, *Bunch* JT1114 (BRI); Big Tree L.A., S.F.832, SE of Bellthorpe, Jun 1993, *Bean* 6120 (BRI); corner of Alex Rd & Attunga Lane, Mt Glorious, Oct 1997, *Phillips* 70 (AD, BRI); South Stradbroke Island, Jul 1998, *Leiper s.n.* (BRI); Gold Creek road, Brookfield, W of Brisbane GPO, Feb 2000, *Bean* 16034 (BRI, NSW, NY); Brisbane River, Long Pocket, Indooroopilly, Sep 2000, *Batianoff* 200905 (BRI, DNA, NSW); Industry Drive, Caboolture, Apr 2001, *Bean* 17617 (BRI, MEL, PRE). **New South Wales.** NORTH COAST: Tuntable Creek road, ESE of Nimbin, Sep 1994, *Bean* 7933 (BRI, NSW). **Mexico:** 15 km W of Santa Rosa, Verz Cruz, Oct 1930, *Reddick* 616 (BH); San Andres, NW of San Cristobal, Feb 1931, *Souviron & Erlanson* 76 (BH); top of ridge between La Cumbre and Las Joyas, Jan 1979, *Nee & Iltis* 16695 (BH, NY); along highway Mex. 190, 10 km SW of Motozintla, Dec 1985, *Nee* 32331 (BH, NY).

***Distribution and habitat*:** *Solanum chrysotrichum* is indigenous to southern Mexico, Guatemala, Costa Rica and Panama, and naturalised in many subtropical parts of the world. It is naturalised in south-eastern Queensland, and extreme north-eastern N.S.W. (**Map 13**). It inhabits degraded places in association with a range of other weedy species.

***Notes*:** This species has been erroneously called *S. hispidum* Pers. for many years, but true *S. hispidum* is from the Peruvian Andes, and has not been reported as a naturalised plant. Identification of Queensland material was achieved by matching with Mexican specimens identified by neotropical *Solanum* experts, M. Whalen and M. Nee.

***Phenology*:** Flowers and fruits may be found at any time of the year.

31. *Solanum torvum Sw., Prodr. 47 (1788). **Type:** Jamaica, undated, *O. Swartz s.n.* (holo: S), *n.v., fide* D'Arcy (1974: 860).

Solanum largiflorum C.T.White, Queensland Agric. J. 8: 170 (1917). **Type:** Queensland. WIDE BAY DISTRICT: Kin Kin, March 1916, *C.T. White & W.D. Francis* (syn: MEL, NSW), photos at BRI.

***Illustrations*:** Symon (1981: 115); Welman (2003: 4).

Erect, rhizomatous perennial shrub, 0.8–2.5 m high. Juvenile branchlets with 5–15 prickles per dm, 2–5 mm long; leaves (in outline) broadly ovate, deeply lobed, with 2–4 pairs of lobes; lamina 12–18 cm long, 9–15 cm wide, with 0–9 prickles on upper surface. Adult branchlets brown or green; prickles absent or present, 0–5 per decimetre, straight or curved, broad-based, 3–7 mm long, 1.5–2 times longer than wide; stellae dense, 0.6–1 mm diameter, stalks 0.1–0.4 mm long; lateral rays 6–9, porrect; central ray 0.1–0.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* broadly ovate or orbicular, entire or shallowly lobed throughout; lobes 1–3 on each side, acute or obtuse, lobing index 1–1.3; lamina 7.5–16.5 cm long, 4–13 cm wide, 1.1–1.5 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–4 mm long, obliqueness index 0–5 percent; petioles 0.9–4.3 cm long, 15–26% length of lamina, prickles absent. *Upper leaf surface* green; prickles absent; stellate hairs distributed throughout; protostellae present; ordinary stellae sparse to dense, 0.25–0.5 mm apart, 0.3–0.5 mm across, sessile; lateral rays 5–8, porrect; central ray 0.8–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.2–0.5 mm apart. *Lower leaf surface* white; prickles 0–3, straight, broad-based, prickles absent or present on midvein only; stellae dense, 0.1–0.3 mm apart, 0.6–1 mm diameter, stalks 0–0.4 mm long; lateral rays 8–9, porrect; central ray 0.3–0.9 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, 2–4-branched, common peduncle 2–17 mm long, rachis prickles absent; 15–50-flowered, weakly andromonoecious, flowers 5-merous; pedicels

6–10 mm long at anthesis, same thickness throughout, 0.6–0.8 mm thick at mid-point, prickles absent. Calyx tube 1–1.5 mm long, lobes deltate or rostrate, 1.5–4.5 mm long; prickles absent at anthesis; stellae sparse to moderate, white, 0.2–0.5 mm across, sessile, lateral rays 6–8, central ray 0.8–1.8 times as long as laterals, not gland-tipped or gland-tipped; finger hairs present; Type 2 hairs absent. Corolla white, 9–12 mm long, deeply lobed, inner surface glabrous; anthers 6–7.5 mm long; ovary with Type 2 hairs only; functional style 9–10.5 mm long, erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 2–15 per inflorescence, globular, 12–17 mm diameter, yellowish-green, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.5–0.7 mm thick; pedicels 14–19 mm long in fruit, 1.8–2.4 mm thick at mid-point; seeds white or pale yellow, 2.2–2.4 mm long. *Devil's Fig.* **Fig. 2.**

***Selected specimens examined*: Northern Territory.** Berrimah Farm, Darwin, Feb 1981, *Rankin* 2582 (BRI, CANB, DNA). **Queensland.** Burke District: Leichhardt River, Mt Isa, Nov 1999, *Stevens & Fox* IDF909 (BRI). Cook District: Daintree, May 1952, *Everist* 5129 (BRI); Copper Lode Falls Dam area, Cairns, Dec 1972, *Birch* 12 (BRI); Mt Webb near 'Starcke' HS, N of Hope Vale mission, Aug 1978, *Kanis* 1912 (BRI, CANB, L, MO, US); Cooktown rubbish dump, Jul 1991, *Waterhouse* 1881 (BRI, DNA, PERTH); Lakefield N.P., Twelve Mile area, Normanby River, Jan 1993, *Forster* PIF12901 & *Bean* (AD, BRI, QRS). North Kennedy District: Ayr, undated, *Michael* 1533 (BRI); Cromarty, Mar 1935, *Blake* 8317 (BRI); Black River, *c.* 14 miles [23 km] N of Townsville, May 1967, *Symon* 4743 (BRI); *c.* 15 km N of Proserpine, western foot of Mt Dryander, Jul 1974, *Henderson* H2228 *et al.* (BRI); Fletcher Creek, 6 km N of 'Toomba' HS, Nov 1986, *Bolton* MPB740 (BRI). South Kennedy District: 17 km SE of Kuttabul on Townsville–Mackay Hwy, Sep 1981, *Haegi* 2059 (BRI, NSW); Newry Island, Dec 1986, *Dalliston* N275 (BRI); Bowen River crossing, 24 km S of Collinsville, Jun 1989, *Jobson* 615 (BRI, CANB, NSW). Leichhardt District: just west of Nebo, Apr 1998, *Holland* 1192 (BRI). Port Curtis District: Yeppoon, Jul 1974, *Swarbrick* 6190 (BRI); 0.9 km from Bruce Hwy, towards St Lawrence, Apr 2000, *Bean* 16263 (BRI); T.R.202 Colosseum Creek, Apr 2000, *Forster* PIF25478 & *Booth* (AD, BRI, MEL, QRS). Wide Bay District: Theebine, Nov 1921, *White s.n.* (BRI); Noosa N.P., north east corner, Aug 1985, *Sharpe* 3832 *et al.* (BRI, MEL); Ocean Park estate, Dundowran, Nov 1991, *Forster* PIF9177 & *Smyrell* (AD, BRI, MEL). Moreton District: Mt Buderim, Jan 1935, *Blake* 7188 & *Middleton* (BRI); Nairn Road, Morayfield, *c.* 35 km N of Brisbane, Mar 2000, *Bean* 16108 (BRI, CANB, MEL, MO, NSW); Godfreys road, Bli Bli, *c.* 1 km N of Maroochy River, Mar 2000, *Bean* 16136 (BRI, DNA, NSW).

***Distribution and habitat*:** *Solanum torvum* is native to the West Indies, but is now naturalised in many tropical parts of the world. It is naturalised along the east coast of Queensland, especially north of the Tropic of Capricorn, and at Mt Isa (**Map 15**). It is recorded from the far north of the Northern Territory, but is not yet known from New South Wales. It grows on degraded sites, including roadsides, pasture and quarries.

***Phenology*:** Flowers and fruits may be found at any time of the year.

***Notes*:** Boonkerd *et al.* (1993) list a number of uses made for *S. torvum* in south-east Asia. For example, young immature fruits are eaten raw or cooked as a vegetable, and the fruits are commonly available in local markets. *S. torvum* is sometimes used as a disease resistant rootstock for Tomato and Eggplant.

Group 22 (S. quitoense group) of Whalen (1984)

Mature fruits densely stellate-tomentose, 25–35 mm diameter; stems, branchlets and leaves prickly, calyx not prickly; branchlet stellae with lateral rays ascending or multiradiate; adult leaves large, broadly-ovate to orbicular, shallowly lobed; ovary and style with dense stellate hairs; stellae of upper leaf surface with central ray many times longer than laterals; corolla white; seeds brown to black.

12 species in the world; 1 species in Australia, 1 species indigenous to Queensland.

32. Solanum lasiocarpum Dunal, Hist. Nat. Solanum 222 (1813); *S. ferox* var. *lasiocarpum* (Dunal) Miq., Flora Indiae Batavae 2: 647 (1856). **Type:** t. 35, Hortus Indicus malabaricus Vol. 2 (1680); lecto: the illustration, *fide* Whalen *et al.* (1981).

***Illustration*:** Symon (1981: 107), as *S. ferox.*

Erect, rhizomatous perennial shrub, 1–2 m high. Juvenile stage unknown. Adult branchlets grey or brown; prickles 20–350 per decimetre, straight, acicular or broad-based, 1–4 mm long, 5–10 times longer than wide; stellae dense, 0.8–1.2 mm diameter, stalks 0–0.5 mm long; lateral rays 8–10, ascending or multiradiate; central ray 0.8–1.5 times as long as laterals, not gland-

tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* broadly ovate or orbicular, shallowly lobed throughout; lobes 3–8 on each side, acute or obtuse, lobing index 1.1–1.3; lamina 10–35 cm long, 8.5–26 cm wide, 1.1–1.3 times longer than broad, apex obtuse or acute, base obtuse or cordate, oblique part 0–15 mm long, obliqueness index 0–4 percent; petioles 2.7–7.2 cm long, 18–30% length of lamina, prickles present. *Upper leaf surface* green; prickles 0–120, straight, acicular or broad-based, 2–7 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae density moderate to dense, 0.2–0.4 mm apart, 0.35–0.5 mm across, sessile; lateral rays 4–8, ascending or multiradiate; central ray 4–10 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–60, straight, acicular or broad-based, prickles absent or present on midvein only or present on midvein and lateral veins; stellae dense to very dense, 0.1–0.3 mm apart, 0.5–0.8 mm diameter, stalks 0–0.4 mm long; lateral rays 8–12, ascending or multiradiate; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–2 mm long, rachis prickles present; 2–10-flowered, weakly andromonoecious, flowers 5-merous; pedicels 4–9 mm long at anthesis, same thickness throughout, 0.7–1 mm thick at mid-point, prickles absent. Calyx tube 2.5–5 mm long, lobes deltate, 2–8 mm long; prickles absent at anthesis; stellae very dense, yellow or white, 0.5–0.8 mm across, stalks 0–1 mm long, lateral rays 6–12, central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white, 12–18 mm long, deeply lobed, inner surface glabrous or sparsely stellate-hairy; anthers 6–8.5 mm long; ovary with stellate hairs only; functional style erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 25–35 mm diameter, orange, conspicuously tomentose; mesocarp moist but not juicy; pedicels 10–15 mm long in fruit, 0.9–1.5 mm thick at mid-point; seeds brown to black, 2.2–3.5 mm long.

***Specimens examined*: Queensland.** Cook District: near Lockerbie, Dec 1980, *Hyland* 10946A (BRI, QRS); 22.4 km NE of Bamaga, Feb 1994, *Fell* DGF4064 & *Stanton* (BRI, MEL, QRS).

***Distribution and habitat*:** *Solanum lasiocarpum* is widespread from India and southern China, and throughout Indochina and Malesia. In Australia, it is known only from the Bamaga area (**Map 8**). It grows in notophyll rainforest.

***Phenology*:** Flowers recorded in February; fruits (maturity unknown) recorded in December.

***Notes*:** A photograph of the iconotype is shown in Whalen *et al.* (1981: 102). Heiser (1996) treated *S. lasiocarpum* as a variety of *S. ferox* L., but the latter differs significantly by the aculeate and accresent calyx.

***Conservation status*:** *S. lasiocarpum* is known only from near Bamaga, and is not protected in a conservation reserve. Its occurrence equates to a single location, using the definition provided by the IUCN (2001). Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU D1+2).

Group 23 (S. mammosum group) of Whalen (1984)

Small prickly shrubs; leaves broad, shallowly lobed; seeds 4.8–5.5 mm long; branchlets and leaves without stellate hairs but with many finger hairs; mature fruits globose, 25–45 mm diameter, orange, with dry mesocarp; corolla deeply lobed; calyx prickly; Type 2 hairs present on branchlets.

About 20 species in the neotropics; 1 species naturalised in Queensland.

33. *Solanum capsicoides All., Mélanges Philos. Math. Soc. Roy. Turin 5: 12 (1773). **Type:** cultivated at Turin, undated, *C. Allioni s.n.* (holo: TO), *n.v.*, *fide* Welman (2003).

Solanum ciliatum Lam., Tab. Encyc. Meth. Bot. 2: 21 (1794). **Type:** locality unknown, undated, coll. unknown (syn: P-LA, microfiche 467.18).

***Illustrations*:** Symon (1981: 102); Welman (2003: 6).

Erect, rhizomatous perennial shrub, 0.3–1 m high. Juvenile branchlets with *c.* 100 prickles per dm; leaves (in outline) broadly ovate, deeply lobed, with 3 pairs of lobes; lamina *c.* 11 × 13 cm, with *c.* 10 prickles on upper surface. Adult branchlets brown or green; prickles 30–80 per decimetre, straight, acicular, 1.5–8 mm long, 8–16 times longer than wide; stellae absent; finger hairs present, not gland-tipped, 3–6 mm long; Type 2 hairs sparse to dense. *Adult leaves* broadly ovate or orbicular, entire or shallowly to deeply lobed throughout; lobes 2–4 on each side, acute or obtuse, lobing index 1–3; lamina 7.5–16.5 cm long, 6–13 cm wide, 1–1.3 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–6 mm long, obliqueness index 0–4 percent; petioles 3.8–6.2 cm long, 35–55% length of lamina, prickles present. *Upper leaf surface* green; prickles 4–30, straight, acicular or broad-based, 3–10 mm long, prickles present on midvein and lateral veins; stellate hairs absent; finger hairs present, 0.5–2 mm apart, not gland-tipped, 1–4 mm long; Type 2 hairs present only in vein depressions. *Lower leaf surface* green; prickles 30–50, straight, acicular or broad-based, prickles present on midvein and lateral veins; stellae absent; finger hairs present, 0.6–6 mm apart, not gland-tipped, 1.5–3 mm long or absent; Type 2 hairs present only on veins. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle absent, rachis prickles present; 1–5-flowered, weakly andromonoecious, flowers 5-merous; pedicels 8–21 mm long at anthesis, same thickness throughout, 0.3–0.4 mm thick at mid-point, prickles present. Calyx tube 1–3 mm long, lobes deltate, 1.5–3 mm long; prickles present at anthesis, 20–30 per flower, 1.5–6 mm long; stellae absent; finger hairs present; Type 2 hairs present. Corolla white, 7–10 mm long, deeply lobed, inner surface glabrous; anthers 4.5–6 mm long; ovary with Type 2 hairs only; functional style 5.5–7 mm long, erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 3–7 mm long. Mature fruits 1–3 per inflorescence, globular, 25–45 mm diameter, orange, 1-locular (septum absent or incomplete); placenta not apparent; mesocarp dry; exocarp *c.* 2 mm thick; pedicels 17–28 mm long in fruit, 1–1.4 mm thick at mid-point; seeds pale yellow, 4.8–5.5 mm long. *Devil's Apple.*

***Selected specimens examined*: Queensland.** Cook District: Malanda Falls N.P., Jun 1965, *Cunningham s.n.* (BRI); S.F.310, Gadgarra, *c.* 4 km ESE of Lake Barrine, Mar 1976, *Moriarty* 1995 (BRI, QRS); edge of Lake Eacham, *c.* 45 km SSW of Cairns, Aug 1976, *Henderson* H2402 (BRI); Dismal Ck, 6 km W of Kuranda, Sep 1999, *Wannan* 1401 *et al.* (BRI). South Kennedy District: 9 miles [14 km] SW of Pinnacle, Jan 1964, *Mayne s.n.* (BRI); Eungella, Apr 1978, Byrnes 3696 & *Clarkson* (BRI); Slade Point dunal system, Mar 1993, *Champion* 782 (BRI). Burnett District: Cherbourg, *c.* 6 miles [10 km] SE of Murgon, Oct 1969, *coll. unknown* (BRI). Wide Bay District: Sandy Ck, Biggenden–Childers road, Dec 1969, *Colbran s.n.* (BRI); Lake Cootharaba, side of Mill Point track, Apr 1986, *Sandercoe* C1160 & *Milne* (BRI); Currymore, NW of Maleny, Apr 1993, *Bean* 6016 (BRI, NSW). Moreton District: Virginia near Brisbane, Nov 1915, *White s.n.* (BRI); Myer's Ferry, Southport, Apr 1920, *Francis s.n.* (BRI); 2 km S of Alstonville, Aug 1985, *Reynolds & Calway s.n.* (BRI); Natural Bridge N.P., Numinbah Valley, Feb 2000, *Bean* 16006 (BRI); North Tamborine Environmental Park, Mt Tamborine, Mar 2001, *Boyle* TPB185 & *Phillips* (BRI). **New South Wales.** North Coast: Kings Beach, Broken Head, Mar 1982, *Hind* 3039 (BRI, NSW); Tuckean Island road, W of Wardell, Apr 2001, *Bean* 17577 (BRI, NSW).

***Distribution and habitat*:** *Solanum capsicoides* is indigenous to coastal Brazil (Whalen 1984). It is widely naturalised in coastal and subcoastal areas of Queensland and northern New South Wales (**Map 14**). It inhabits degraded sites, or rainforest margins, prefering moist shady areas.

***Phenology*:** Flowers and fruits may be found at any time of the year.

***Notes*:** *S. capsicoides* was first recorded as naturalised for Queensland by Bailey (1881), under the name *S. aculeatissimum* Jacq., to which it is closely related. The differences were outlined by Welman (2003).

S. capsicoides completely lacks stellate hairs; the indumentum comprises finger hairs and Type 2 hairs.

Group 25 (S. hystrix group) of Whalen (1984)

Small plants <1 m high (100%); the leaves green on upper surface (100%); corolla inner surface glabrous (100%); seeds pale yellow (100%); adult leaves lobed (100%); calyx prickles >5 per flower (100%); inflorescence weakly to strongly andromonoecious (100%); calyx lobes not exceeding mature fruits (100%); prickles present on both upper leaf surface (100%); branchlet prickles acicular (95%); prickles present on lower leaf surface (95%); the herbaceous resprouter habit (90%); mature fruits yellow-green to green (90%); adult leaves

with winged petioles (50%); finger hairs on upper leaf surface (50%); style sigmoid (30%).

19 species endemic to Australia; 10 species indigenous to Queensland.

34. Solanum ditrichum A.R.Bean **sp. nov.** Frutex fusus humilis; ramuli pilis digitatis abundis sed pilis stellatis raris vel absentibus; folia adulta 3–6 paribus loborum acutorum non profundorum, et usque ad 100 aculeos in superficiebus ambabus, stellis superficiei superioris radio centrali radiis lateralibus 2–3plo longiore; calyx aculeatus sed non accrescens; stylus functionalis sigmoideus; semina flaveola. **Typus:** New South Wales. North Coast: Branch road, Dalmorton State Forest, SW of Grafton, 7 January 2001, *A.R. Bean* 17255 (holo: BRI (2 sheets + spirit); iso: CANB, K, MEL, NSW).

Solanum sp. (Mt Maroon P.I. Forster+ PIF11564) in Henderson (2002).

Prostrate or sprawling, herbaceous resprouter, 0.1–0.6 m high. Juvenile stage absent. Adult branchlets green; prickles 80–180 per decimetre, straight, acicular, 1–7 mm long, 10–17 times longer than wide; stellae sparse, 0.5–0.6 mm diameter, stalks 0–0.1 mm long; lateral rays 5–8, porrect; central ray present, 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs abundant, gland-tipped, 0.1–0.7 mm long; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, shallowly lobed throughout; lobes 3–6 on each side, acute, lobing index 1.2–1.4; lamina 6–12.5 cm long, 4.5–9.5 cm wide, 1.3–1.8 times longer than broad, apex acute, base obtuse or cordate, oblique part 1–10 mm long, obliqueness index 2–11 percent; petioles 2–5.6 cm long, 20–50% length of lamina, prickles present. *Upper leaf surface* green; prickles 15–100, straight, acicular, 2–8 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae sparse, 0.8–1.7 mm apart, 0.3–0.4 mm across, sessile; lateral rays 4–7, porrect; central ray 2–3 times as long as laterals, not gland-tipped; finger hairs present, 0.4–1.2 mm apart, not gland-tipped or gland-tipped, 0.1–0.6 mm long; Type 2 hairs absent. *Lower leaf surface* green; prickles 30–100, straight, acicular, present on midvein and lateral veins; stellae sparse to moderate, 0.4–1.5 mm apart, 0.5–0.7 mm diameter, sessile; lateral rays 4–8, porrect; central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs present, 0.3–1 mm apart, gland-tipped, 0.1–0.6 mm long; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 2–16 mm long, rachis prickles present; 2–5-flowered, weakly andromonoecious, flowers 5-merous; pedicels 5–18 mm long at anthesis, markedly thicker distally, 0.4–1 mm thick at mid-point, prickles present. Calyx tube 3–5 mm long, lobes deltate or attenuate, 4–8 mm long; prickles present at anthesis, 36–70 per flower, 2–7 mm long; stellae sparse, transparent, 0.4–0.5 mm across, sessile, lateral rays 4–8, central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs present; Type 2 hairs absent. Corolla purple, 9–17 mm long, rotate, inner surface glabrous; anthers 4–5 mm long; ovary glabrous, or with Type 2 hairs only; functional style 9–10.5 mm long, sigmoid, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 2–7 mm long. Mature fruits 1 or 2 per inflorescence, globular, 21–26 mm diameter, yellowish-green or pale green with dark green streaks, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp *c.* 2.5 mm thick; pedicels 15–28 mm long in fruit, 1.3–2 mm thick at mid-point; seeds pale yellow, 2.3–2.6 mm long. **Fig. 3, 24.**

***Specimens examined*: Queensland.** Wide Bay District: Gympie, undated, *Kenny* (BRI); Kin Kin, Mar 1916, *Francis & White s.n.* (BRI). Darling Downs District: top of Mt Mitchell, Main Range, Jul 1930, *White* 6881 (BRI); S.F.401, 2 km W of Mt Huntley, Oct 1992, *Forster* PIF11852 *et al.* (AD, BRI, K, L, MEL, NSW); Portion 90, Wyberba, near Girraween N.P., Sep 1993, *Bean* 6409 & *Forster* (BRI); 6 km from Mt Colliery towards Gambubal S.F., E of Warwick, Apr 1999, *Bean* 14806 (BRI). Moreton District: Yandina, Mar 1891, *Simmonds s.n.* (BRI); Springbrook, Sep 1929, *White* 6244 (BRI); foot of Mt Ernest, Oct 1932, *Blake* 4287 (BRI); Campbell's Folly, 4 km SW of Tylerville, Sep 1992, *Forster* PIF11523 & *Leiper* (AD, BRI); Mt Maroon, summit area, Sep 1992, *Forster* PIF11564 & *Leiper* (BRI, MEL); Mt Gillies, Oct 1992, *Forster* PIF12076 & *Reilly* (AD, BRI); Duck Creek road, near O'Reilly's Guest House, Jan 2000, *Bean* 15972 (BRI, NSW); Wilkies Scrub, Wongawallan, 7 km W of Coomera, Jul 2001, *Bean* 17689 (BRI, CANB, L, MO). **New South Wales.** Northern Tablelands: Gibraltar Range N.P., *c.* 67 km E of Glen Innes, Oct 1969, *Coveny* 2236 (AD, BRI, NSW); *c.* 12 km from Tenterfield on road to Bluff Rock, Sep 1976, *Pearce* 87 (NSW); *c.* 3 km S of

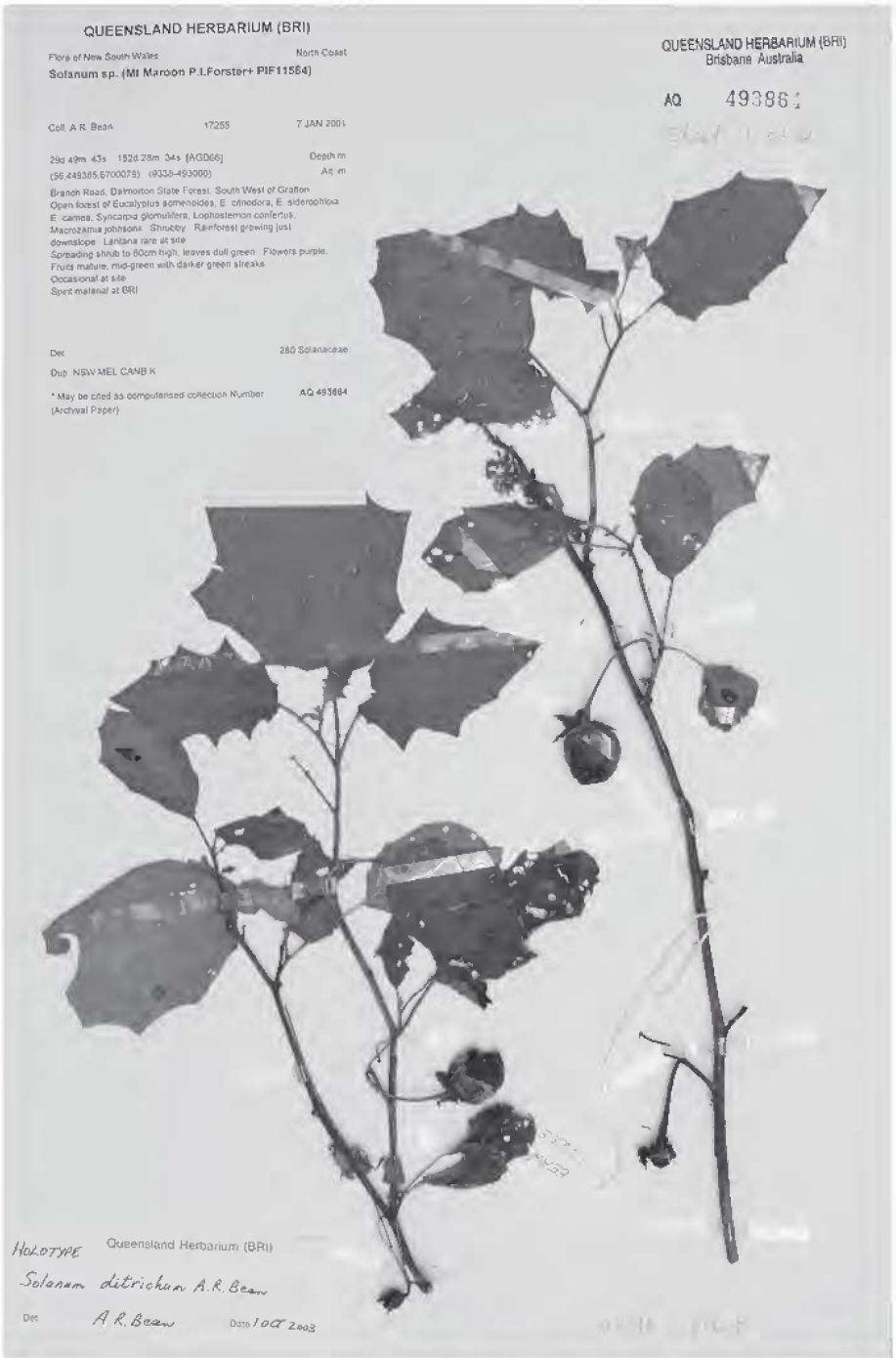

Fig. 24. Holotype of ***Solanum ditrichum***.

Wallangarra on main road to Tenterfield, Dec 1977, *Haegi* 1547 (BRI, NSW); 29 km N of Tenterfield, off the Mt Lindesay Hwy, Bungoona track to summit in Bald Rock N.P., Oct 1993, *Coveny* 16560 & *Whalen* (AD, BRI, MO, NSW). NORTH COAST: Toonumbar S.F., *c.* 26 km NW of Kyogle, Feb 1972, *Henderson* H1265 (BRI); Mountaineer track, Chichester S.F., Dungog, Jun 1974, *Swan* 24 (AD, BRI); Whian Whian S.F., N of Lismore, Aug 1975, *Moriarty* 1707 (BRI); summit of Bald Knob, 10 km W of Woodenbong, Sep 1998, *Bean* 13799 (BRI); Mt Warning, Oct 1963, *Johnson* 2730 (BRI); Ewingar S.F., S of Tabulam, Feb 2001, *Bean* 17331 (BRI, NSW).

***Distribution and habitat*:** *Solanum ditrichum* is a widespread species extending from Dungog in New South Wales to Mt Mee in Queensland (plus historical records from Yandina, Kin Kin and Gympie) (**Map 16**). It grows in wet sclerophyll eucalypt forest or on rainforest margins.

***Phenology*:** Flowers and fruits are recorded for all months except May and June.

***Notes*:** *S. ditrichum* is closely related to *S. campanulatum* R.Br. It differs from *S. campanulatum* by having pale seeds, acute leaf lobes, calyx scarcely accrescent, finger hairs very short on upper leaf surface, and the stellate hairs rare or absent on branchlets. *S. campanulatum* is restricted to the greater Sydney area, as far north as Denman and Scone.

The mature fruits of *S. ditrichum* remain green to yellowish-green at maturity, although they may have some light streaking of purple at the pedicel end (R. Fensham pers. comm.)

***Conservation status*:** Widespread. Not considered at risk.

***Etymology*:** From the Greek *di-* meaning two or double, and *-trichos* meaning hair. This refers to presence of both stellate and finger hairs on the leaves of this species.

35. Solanum cookii Symon, J. Adelaide Bot. Gard. 4: 233 (1981). **Type:** cultivated at Waite Institute (ex Upper Lankelly Creek, Cape York Peninsula, Queensland), 25 February 1972, *D.E. Symon s.n.* (holo: AD; iso: BRI, CANB, K).

Solanum adenophorum var. *indivisum* Domin, Biblioth. Bot. 89: 586 (1929). **Type:** Queensland. NORTH KENNEDY DISTRICT: Rockingham Bay, undated, *J. Dallachy* (holo: K, *n.v.*), *fide* Symon (1981).

***Illustration*:** Symon (1981: 234)

Prostrate or sprawling, herbaceous resprouter, 0.1–0.5 m high. Juvenile stage absent. Adult branchlets green; prickles 30–300 per decimetre, straight, acicular, 1–8 mm long, 12–17 times longer than wide; stellae sparse to dense, 0.6–1 mm diameter, stalks 0–0.2 mm long; lateral rays 4 or 5, porrect; central ray 2–5 times as long as laterals, gland-tipped; finger hairs present, gland-tipped, 0.2–1.7 mm long; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, shallowly lobed throughout; lobes 4 or 5 on each side, acute, lobing index 1.1–1.2; lamina 5–10.5 cm long, 4–7.5 cm wide, 1.3–1.7 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–8 mm long, obliqueness index 0–8 percent; petioles 3.4–5.4 cm long, 40–55% length of lamina, prickles present. *Upper leaf surface* green; prickles 30–145, straight, acicular, 1–7 mm long, prickles present on midvein and lateral veins; stellate hairs absent; finger hairs present, 0.1–0.6 mm apart, not gland-tipped or gland-tipped, 0.2–2 mm long; Type 2 hairs present throughout, 0.1–1 mm apart. *Lower leaf surface* green; prickles 20–65, straight, acicular, present on midvein only or present on midvein and lateral veins; stellae very sparse to moderate, 0.5–3 mm apart, 0.5–0.9 mm diameter, stalks 0–0.2 mm long; lateral rays 4–6, porrect; central ray 2–5 times as long as laterals, not gland-tipped; finger hairs present, 0.1–0.3 mm apart, not gland-tipped or gland-tipped, 0.1–1.4 mm long; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 18–27 mm long, rachis prickles present; 2–7-flowered, with all flowers bisexual and 5-merous; pedicels 4–7 mm long at anthesis, same thickness throughout, 0.2–0.4 mm thick at mid-point, prickles present. Calyx tube 1.5–3 mm long, lobes attenuate, 7–11 mm long; prickles present at anthesis, 25–35 per flower, 2.5–6 mm long; stellae absent or sparse or moderate, transparent, 0.5–0.7 mm across, stalks 0–0.1 mm long, lateral rays 2–4, central ray 4–6 times as long as laterals, not gland-tipped; finger hairs present; Type 2 hairs absent. Corolla mauve, 8–12 mm long, shallowly lobed, inner surface glabrous; anthers 3.5–5 mm long; ovary with Type 2 hairs only; functional style 5–6 mm long, erect, glabrous. *Fruiting calyx* with lobes more than or exceeding mature fruit,

prickles 2.5–6 mm long. Mature fruits 1–6 per inflorescence, globular, 11–13 mm diameter, green, 2-locular; placenta in cross-section stalked, circular to elliptical; mesocarp moist but not juicy; exocarp 0.6–0.7 mm thick; pedicels 5–9 mm long in fruit, 0.6–1 mm thick at mid-point; seeds pale yellow, 1.8–2 mm long.

Specimens examined: **Queensland.** Cook District: *c.* 6 miles [10 km] SW of Yungaburra, Curtain Fig site, Dec 1968, *Tracey* (BRI); Upper Lankelly Creek, western slopes of McIlwraith Range, NE of Coen, Oct 1969, *Webb* & *Tracey* 8355 (BRI); S.F.144, Agapetes L.A., Dec 1979, *Hyland* 10174 (BRI, QRS); S.F.191, Parish of Barron, Dec 1991, *Hyland* 14405 (BRI, QRS); S.F.194, Parish of Western, Mar 1994, *Hyland* 15052 (QRS); Klondike Mine road, May 1995, *Hyland* 15329 (QRS); Shiptons Flat, Jun 1996, *Jago* 4025 & *Roberts* (BRI); Wongabel S.F.191, Nov 1997, *Forster* PIF21929 *et al.* (BRI, MEL, QRS). North Kennedy District: Tully Falls, Oct 1948, *Fielding* (QRS); Elphinstone Ck, Coldwater, 24 km W of Ingham, Jun 1972, *Seton* (BRI); 'Bellview', Evelyn, Jan 1974, *Collins* (BRI); Elliots Toe, Mt Elliot, Jun 1990, *Cumming* 9965 (BRI); Keoghs Scrub, Portion 205, Parish of Herberton, Oct 1993, *Gray* 5717 (QRS).

***Distribution and habitat*:** *Solanum cookii* is endemic to Queensland. Sporadically distributed along the east coast from Coen to Townsville (**Map 12**). It grows on disturbed sites in microphyll or tall notophyll rainforest, or on the margin with woodland communities. Altitude is usually between 500–1100 metres, but it has occasionally been found near sea level.

***Phenology*:** Flowers are recorded from November to February, and also June; mature fruits are recorded from October to February, and also in June.

***Notes*:** *S. cookii* has very long finger hairs on upper leaf surface, while on the lower surface, finger hairs are mixed with stellate hairs (lateral rays often poorly developed).

***Conservation status*:** *S. cookii* has been collected from about 7 locations in north Queensland over the last 10–15 years. It is not currently known from a conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Near Threatened" is recommended.

36. Solanum multiglochidiatum Domin, Biblioth. Bot. 89: 586 (1929). **Type:** Queensland. Cook District: near Mungana, February 1910, *K. Domin* (holo: ?PR), *n.v.*

***Illustration*:** Symon (1981: 232)

Prostrate or sprawling, herbaceous resprouter, 0.2–0.4 m high. Juvenile stage absent. Adult branchlets brown; prickles 140–320 per decimetre, straight, acicular, 1–6 mm long, 13–20 times longer than wide; stellae sparse to dense, 0.3–0.45 mm diameter, stalks 0–0.1 mm long; lateral rays 5–8, porrect; central ray 0.3–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* broadly ovate or orbicular, entire or shallowly lobed throughout; lobes 2 or 3 on each side, obtuse, lobing index 1–1.1; lamina 6.5–9.5 cm long, 3.4–6 cm wide, 1.1–2.1 times longer than broad, apex obtuse, base cuneate or obtuse, oblique part 0–6 mm long, obliqueness index 0–6 percent; petioles 1.2–1.7 cm long, 13–25% length of lamina, prickles present. *Upper leaf surface* green; prickles 100–400, straight, acicular, 1–6 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.8–2.5 mm apart, 0.25–0.45 mm across, sessile; lateral rays 3–7, porrect; central ray 0.8–1.6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 40–250, straight, acicular, present on midvein and lateral veins; stellae sparse to dense, 0.3–1.4 mm apart, 0.5–0.7 mm diameter, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 17–27 mm long, rachis prickles present; 6–10-flowered, weakly andromonoecious, flowers 5-merous; pedicels 8–14 mm long at anthesis, same thickness throughout, 0.5–0.8 mm thick at mid-point, prickles present. Calyx tube 2.5–4 mm long, lobes attenuate, 3–6 mm long; prickles present at anthesis, 36–50 per flower, 1.5–4 mm long; stellae moderate to dense, transparent, 0.4–0.5 mm across, stalks 0–0.1 mm long, lateral rays 4–8, central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white or mauve, 13–18 mm long, rotate, inner surface glabrous; anthers 6.5–8.5 mm long; ovary with Type 2 hairs only, or with stellate and Type 2 hairs; functional style 11–14 mm long, sigmoid, with Type 2 hairs only or with stellate and Type 2

hairs, stellae 0.2–0.4 mm across, lateral rays 6–8, central ray 1–2 times as long as laterals. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles 1.5–4 mm long. Mature fruits 1–6 per inflorescence, globular, 16–21 mm diameter, yellowish-green or green, 1-locular (septum absent or incomplete); placenta in cross-section sessile, elliptical; mesocarp moist but not juicy; exocarp 0.4–0.5 mm thick; pedicels 18–23 mm long in fruit, 1.4–2 mm thick at mid-point; seeds pale yellow, 3.3–3.5 mm long.

***Specimens examined*: Queensland.** Cook District: 24 km W of Petford and *c.* 48 km SE of Chillagoe, May 1967, *Symon* 4873 (AD, BRI, CANB, K, L, NSW); Palmer River, Feb 1978, *Hinton* 61 (BRI); Holmes Creek, 3.5 km WNW of Mt Carbine, Jan 1984, *Clarkson* 5105 (AD, BRI, CANB, K, MEL, MO, QRS); 12.6 km SE of Mt Janet, 11.5 km SW of Lakeland Downs township, Jan 1986, *Clarkson* 6293 (AD, BRI, DNA, PERTH, QRS); 9 km SW of Lakeland Downs township, Jan 1986, *Clarkson* 6298 (AD, BRI); 4 km SE of Chillagoe, Jan 1996, *Gray* 6506 (QRS); 4.7 km from Walsh River crossing, N of Chillagoe, Mar 2000, *McDonald* KRM335 (BRI); 14 km W of Chillagoe, Apr 2002, *Bean* 18734 & *McDonald* (BRI). North Kennedy District: 40 Mile Scrub, [SW of Mt Garnet], Mar 1989, *Sankowsky* 979 & *Sankowsky* (BRI).

***Distribution and habitat*:** *Solanum multiglochidiatum* is endemic to Queensland, extending from Lakeland Downs to Forty Mile Scrub (**Map 8**). It usually grows in shrubby eucalypt woodland dominated by *Eucalyptus cullenii, E. leptophleba* or *E. dallachiana*, on gently undulating terrain, in clay-loam soils. There is one record from deciduous microphyll vine thicket.

***Phenology*:** Flowers are recorded from January to March; mature fruits from January to May.

Notes: The type of *S. multiglochidiatum* was sought from PR, but not received. Symon (1981) stated that he had not seen the type. It is possible that the type is missing, but the designation of a neotype is not warranted until further searches are made. The application of the name is not in doubt, as the species is well described in the protologue.

***Conservation status*:** *S. multiglochidiatum* has been collected from about 7 locations in north Queensland over the last 15 years. It is not known from a conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Near Threatened" is recommended. It is currently listed as "Rare" under the Queensland Nature Conservation Act, 1992.

37. Solanum vicinum A.R.Bean **sp. nov.** Frutex parvus, aculeis abundis in ramulis foliis calycibusque; stellae ramulorum 0.4–0.5 mm diametro; folia non profunde lobata, ovata usque late ovata, utrinque viridia; pedunculus communis in inflorescentia praesens; corolla 11–18 mm longa; stylus functionalis sigmoideus; fructus maturitate purpureus, globularis, 24–30 mm diametro. **Typus:** Queensland. Darling Downs District: adjacent to Gambubal State Forest, NE of Killarney, 7 October 2000, *A.R. Bean* 16891 (holo: BRI (1 sheet + spirit); iso: MEL, MO, NSW).

[*S. prinophyllum auct., non* Dunal]

Erect, rhizomatous perennial shrub, 0.2–0.9 m high. Juvenile branchlets with 200–500 prickles per dm, 4–9 mm long; leaves (in outline) broadly ovate, shallowly-lobed, with 3–5 pairs of lobes; lamina 6–7 cm long, 5–6 cm wide, with *c.* 100 prickles on upper surface. Adult branchlets brown or green; prickles 90–180 per decimetre, straight, acicular, 1–11 mm long, 12–18 times longer than wide; stellae sparse, 0.4–0.5 mm diameter, stalks 0–0.15 mm long; lateral rays 5–8, porrect; central ray 0.5–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, shallowly lobed throughout; lobes 4–6 on each side, acute, lobing index 1.4–1.9; lamina 7.5–14 cm long, 4–9.5 cm wide, 1.5–2.1 times longer than broad, apex acute, base cuneate or obtuse, oblique part 1.5–7 mm long, obliqueness index 1–8 percent; petioles 1.7–3.7 cm long, 18–30% length of lamina, prickles present. *Upper leaf surface* green; prickles 100–200, straight, acicular, 3–11 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae density sparse to moderate, 0.6–1.3 mm apart, 0.4–0.5 mm across, sessile; lateral rays 4–8, porrect; central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 100–200, straight, acicular, present on midvein and lateral veins; stellae very sparse to sparse,

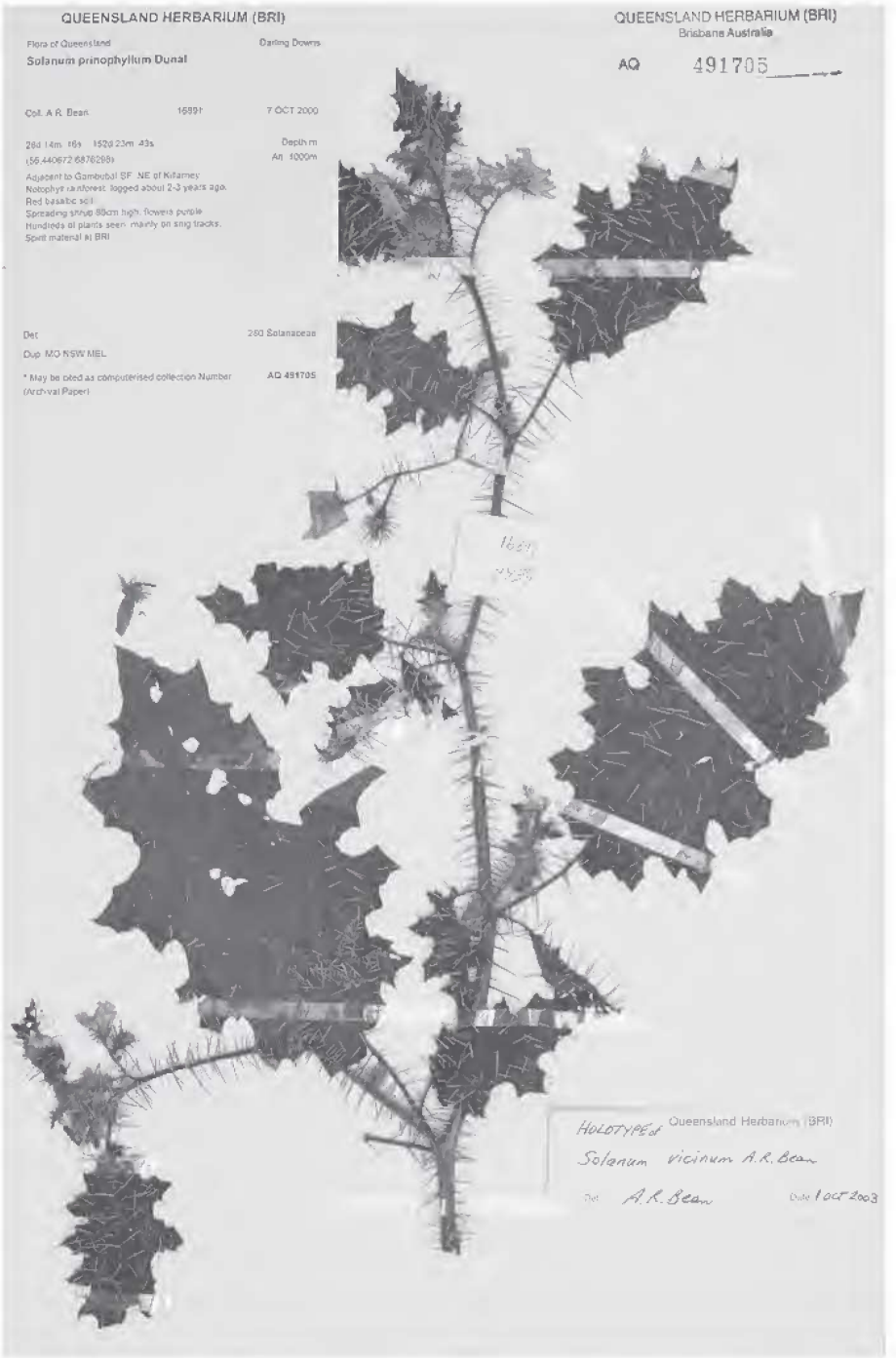

Fig. 25. Holotype of ***Solanum vicinum***.

0.7–2.2 mm apart, 0.5–0.7 mm diameter, sessile; lateral rays 4–8, porrect; central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–8 mm long, rachis prickles present; 3–8-flowered, flowers 5-merous; pedicels 6–15 mm long at anthesis, same thickness throughout, 0.3–0.7 mm thick at mid-point, prickles present. Calyx tube 3–4.5 mm long, lobes attenuate, 3.5–10 mm long; prickles present at anthesis, 50–100 per flower, 1–8 mm long; stellae moderate, yellow or white, 0.3–0.5 mm across, sessile, lateral rays 4–7, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 11–18 mm long, rotate or shallowly lobed, inner surface glabrous; anthers 3.5–5 mm long; ovary with Type 2 hairs only; functional style 8–12 mm long, sigmoid, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles 1–8 mm long. Mature fruits 1 or 2 per inflorescence, globular, 24–30 mm diameter, purple, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 3–3.5 mm thick; pedicels 20–34 mm long in fruit, 1.3–2 mm thick at mid-point; seeds pale yellow, 1.9–2.4 mm long. **Fig. 25.**

***Specimens examined*: Queensland**. Wide Bay District: Peters L.A., Conondale Ranges, Dec 1990, *Bean* 2699 (BRI). Darling Downs District: *c.* 1 km ENE of Gambubal Forest Station, E of Warwick, Dec 1996, *Bean* 11426 (BRI); Goomburra S.F., *c.* 1.5 km W of Mt Castle Lookout carpark, NE of Warwick, Jan 2003, *Bean* 19929 (BRI). Moreton District: Mt Glorious, Jan 1965, *Henderson* H104 (BRI); D'Aguilar Range, on top of Tenison Woods Mt, Jul 1974, *Swan* 55 (BRI); Lewington Road, Mt Mee, Sep 1992, *Symon s.n.* (BRI). **New South Wales**. Northern Tablelands: Hillgrove near Armidale, Sep 1971, *McBarron*, 20291 (BRI, NSW). North Coast: Dorrigo S.F., Oct 1930, *White* 7809 (BRI); *c.* 6 miles [10 km] along Doyles River road, *c.* 48 miles [77 km] W of Wauchope, Oct 1951, *Ford s.n.* (AD, BRI, NSW); Toonumbar S.F., 21 miles [34 km] NW of Kyogle, Sep 1972, *Coveny* 4571 & *Rodd* (BRI, NSW); near Mt Boss, NW of Wauchope, Nov 1999, *Bean* 15712 (BRI, NSW); Welsh's Road, Clouds Creek S.F., N of Dorrigo, Sep 2000, *Bean* 16855 (BRI, CANB, MEL, NSW); Bellangry S.F. lookout, NW of Wauchope, Dec 2000, *Bean* 17230 (BRI, NSW); Armidale – Kempsey road, 10.7 km S of Styx River, Dec 2000, *Bean* 17233 (BRI, NSW).

***Distribution and habitat*:** *Solanum vicinum* is uncommon in Queensland, known from just a few locations as far north as Conondale Ranges (**Map 17**). Reasonably widespread in north-eastern N.S.W., as far south as Wauchope. It grows in notophyll rainforest, or on the margins of same, usually at relatively high altitude.

***Phenology*:** Flowers are recorded from September to February; mature fruits are recorded in May, September and December.

***Notes*:** Closely related to *Solanum prinophyllum* Dunal, and regarded by Symon (1981) as the northern form of that species. *S. vicinum* differs from *S. prinophyllum* by: branchlets with 90–180 prickles per decimetre (30–65 for *S. prinophyllum*), branchlet stellae 0.4–0.5 mm diameter (0.25–0.3 mm diameter for *S. prinophyllum*), shallowly-lobed leaves (lobing index of 1.4–1.9 *vs.* index of 2–4 for *S. prinophyllum*), inflorescences 3–8 flowered with common peduncle usually present and up to 8 mm long (inflorescences 1–3 flowered, common peduncle absent for *S. prinophyllum*), and corolla 11–18 mm long (7–9 mm long for *S. prinophyllum*).

Solanum prinophyllum sens. str. is perhaps more closely related to *S. pungetium* R.Br. than it is to *S. vicinum*. *S. prinophyllum* and *S. pungetium* are not easily separable, but I have noted the following differences, based on collections from central and southern coast of N.S.W.: The leaves and branchlets of *S. prinophyllum* are glabrous to sparsely hairy (always moderately to densely hairy for *S. pungetium*); the stellae of the upper leaf surface in *S. prinophyllum* (when present) are 0.2–0.35 mm diameter, with 6–8 lateral rays and the central ray 0–0.7 times as long as laterals. In *S. pungetium*, the corresponding stellae are 0.35–0.5 mm diameter, with 4 or 5 lateral rays and a central ray 1–1.5 times as long as laterals; the leaves, pedicels and calyces of *S. prinophyllum* tend to have a greater number of prickles; *S. prinophyllum* leaves have 4–6 pairs of lobes, and the lobes may themselves have small lobes or angles, whereas *S. pungetium* leaves have 3 or 4 pairs of lobes, and the lobes are always "simple".

The few specimens I have seen from Victoria suggest that the patterns of variation are different again, and if both species are present there, they are even less distinct.

While I feel sure that *S. prinophyllum* and *S. pungetium* differ sufficiently to warrant

species status for both, it will require a detailed field study to determine the exact relationships involved. The character most often used to separate *S. pungetium* in identification keys, namely the reduced 1 or 2 flowered inflorescence without a common peduncle, is not diagnostic. Both species can have this feature.

***Conservation status*:** Widespread. Not considered at risk.

***Etymology*:** From the Latin *vicinus* - near, neighbouring. This is a reference to its close affinity to *S. prinophyllum*.

38. Solanum papaverifolium Symon, Trans. & Proc. Roy. Soc. South Australia 95: 233–4 (1971). **Type:** New South Wales. 'Maneroo', Graman, *c.* 56 km north-west of Inverell, 11 June 1969, *V.N. Gidley s.n.* (holo: NSW; iso: AD, BRI, CANB, K, NSW).

***Illustration*:** Symon (1981: 180)

Prostrate or sprawling, herbaceous resprouter, 0.2–0.4 m high. Juvenile stage absent. Adult branchlets brown or green; prickles 15–40 per decimetre, straight, acicular, 1–6 mm long, 10–13 times longer than wide; stellae absent; finger hairs absent; Type 2 hairs absent, or sparse. *Adult leaves* broadly ovate, deeply lobed throughout; lobes 4–6 on each side, acute, lobing index 4–27; lamina 4–9 cm long, 2.6–6.5 cm wide, 1.4–1.8 times longer than broad, apex acute, base cuneate, oblique part 0–4 mm long, obliqueness index 0–5 percent; petioles 2.1–3.4 cm long, 25–60% length of lamina, winged, prickles present. *Upper leaf surface* green; prickles 20–50, straight, acicular, 0.5–7 mm long, prickles present on midvein and lateral veins; stellate hairs absent; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 30–150, straight, acicular, present on midvein and lateral veins; stellae absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, pseudo-racemose, common peduncle 24–33 mm long, rachis prickles present; 3–5-flowered, strongly or weakly andromonoecious, flowers 5-merous; pedicels 4–23 mm long at anthesis, same thickness throughout, 0.5–0.6 mm thick at mid-point, prickles present. Calyx tube 2–4 mm long, lobes deltate or attenuate, 2.5–6 mm long; prickles present at anthesis, 12–40 per flower, 1–5 mm long; stellae absent; finger hairs absent; Type 2 hairs present. Corolla purple, 7–11 mm long, rotate, inner surface glabrous; anthers 3.5–5 mm long; ovary glabrous, or with Type 2 hairs only; functional style 4.5–6 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes more than half length of mature fruit, prickles 1–6 mm long. Mature fruits 1 or 2 per inflorescence, globular, yellowish-green or green; mesocarp moist but not juicy; pedicels 28–37 mm long in fruit, 0.9–1.3 mm thick at mid-point.

***Specimens examined*: Queensland.** Darling Downs District: Jimbour, Dec 1875, *Bailey* (BRI); 'Kuyura', Dec 1931, *Cadell* (BRI); Dalby, Nov 1941, *McMahon* (BRI); 'Yandilla', Nov 1951, *Everist s.n.* (BRI); Macalister, Jan 1942, *McCoy* (BRI); 'Paxton', Pirrinuan, via Dalby, Feb 1953, *Guard* (BRI); Brookstead, Apr 1959, *Keeley* (BRI); Hermitage Regional Experimental station, Warwick, Apr 1959, *Seton* 8 (BRI); Branch Creek road, Dalby, Dec 1970, *Mohen* (BRI); 'Kuyura', near Jimbour, Jan 1985, *Jensen* (BRI); 19 km SSW of Dalby, Feb 1995, *Fensham* 1912 (BRI); 5 km SE of Oakey, Feb 1995, *Fensham* 2085 (BRI); Clifton-Leyburn road, near Millbrook road turnoff, Jan 2002, *Bean* 18353 (BRI, MEL, NSW). **New South Wales.** North West Slopes: Bingara, Mar 1901, *McColl s.n.* (NSW). North West Plains. 'Karina', Moree, May 1971, *Strange s.n.* (NSW).

***Distribution and habitat*:** *Solanum papaverifolium* has been recorded from between Jimbour and Warwick in Queensland (**Map 19**). In New South Wales, it has been found from Inverell to Quirindi and Singleton, and west to Narrabri and Moree. It grows on heavy clay soil, in grassland or open eucalypt woodland.

***Phenology*:** Flowers are recorded from October to March; mature fruits from November to April.

***Notes*:** F.M. Bailey, in 1875, was the first to collect the species in Queensland. Charles Moore had earlier collected it from "Liverpool Plains" in New South Wales. The next Queensland collection was in 1931, when a specimen was forwarded to C.T. White. He identified it as *S. hystrix* R.Br., a species from southern Australia, though he probably did not have access to authentic *S. hystrix* specimens. In 1939, while at Kew, he examined it again and determined that it was not *S. hystrix*, but "evidently a native".

In *S. papaverifolium*, the outer surface of the corolla often bears prickles. Only a few other

species (including *S. hystrix*) display this characteristic.

***Conservation status*:** *S. papaverifolium* is currently known from 3 locations. It grows on soils that are utilized for agriculture. All populations are threatened by weeds, roadworks and agriculture, and none is protected in a conservation reserve. Currently listed as "Endangered" under the Queensland Nature Conservation Act, 1992.

Applying the IUCN guidelines (IUCN. 2001), the existing category of "Endangered" is endorsed (EN A3ce; B2ab(iii,v); C1).

The most recent N.S.W. collection was made in 1982, from Moree.

39. Solanum adenophorum F.Muell., Fragm. 2: 162 (1861); *S. adenophorum* var. *adenophorum* Domin, Biblioth. Bot. 89: 586 (1929); *S. adenophorum* var. *typicum* Domin, Biblioth. Bot. 89: 586 (1929), *nom. inval.* **Type:** [Queensland.] between the Dawson and Mackenzie Rivers, 17–20 November 1856, *F. Mueller* (holo: MEL).

Prostrate or sprawling, herbaceous resprouter, 0.15–0.3 m high. Juvenile stage absent. Adult branchlets grey or brown; prickles absent or present, 0–15 per decimetre, straight, acicular, 6–10 mm long, 12–17 times longer than wide; stellae absent; finger hairs present, gland-tipped, 0.4–0.8 mm long; Type 2 hairs dense. *Adult leaves* ovate or broadly ovate, deeply lobed throughout; lobes 3 or 4 on each side, obtuse, lobing index 2.3–5; lamina 3.5–5.5 cm long, 2–4 cm wide, 1.3–1.8 times longer than broad, apex obtuse, base cuneate to cordate, oblique part 0–6 mm long, obliqueness index 0–10 percent; petioles 1.2–4 cm long, 30–80% length of lamina, winged, prickles present. *Upper leaf surface* green; prickles 6–20, straight, acicular, 3–13 mm long, prickles present on midvein and lateral veins; stellate hairs absent; finger hairs present, 0.1–0.3 mm apart, gland-tipped, 0.5–0.9 mm long; Type 2 hairs absent. *Lower leaf surface* green; prickles 11–25, straight, acicular, present on midvein and lateral veins; stellae absent; finger hairs present, 0.3–0.5 mm apart, gland-tipped, 0.3–0.6 mm long; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 9–26 mm long, rachis prickles present; 4–8-flowered, strongly andromonoecious, flowers 5-merous; pedicels 5–10 mm long at anthesis, same thickness throughout, 0.4–0.5 mm thick at mid-point, prickles absent or present. Calyx tube 2–3 mm long, lobes deltate, 2–4.5 mm long; prickles present at anthesis, 5–20 per flower, 3–6 mm long; stellae absent; finger hairs present; Type 2 hairs absent. Corolla white, 8–10 mm long, deeply lobed, inner surface glabrous; anthers 4.5–5.5 mm long; ovary with Type 2 hairs only; functional style 6–7 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles 1–6 mm long. Mature fruits 1 per inflorescence, globular, *c.* 15 mm diameter, yellowish-green or green; pedicels 9–18 mm long in fruit, 0.9–1.2 mm thick at mid-point; seeds pale yellow, 2.8–3.5 mm long.

***Specimens examined*:** **Queensland.** South Kennedy District: Logan Downs Pty Ltd, 'Wentworth', 68 miles [109 km] N of Clermont, Oct 1957, *Saclier* 3 (BRI); 115 km NW of Clermont, Jul 1977, *Dale* 148 (BRI). Leichhardt District: Blackwater Creek, *anno* 1871, *Bowman s.n.* (MEL); Marlborough–Sarina road, *c.* 45 miles [72 km] from Marlborough, May 1960, *Johnson* 1779 (BRI); Dipperu N.P., *c.* 24 km S of Nebo, Sep 1971, *McDonald* 143 (BRI); along boundary fence, Taunton N.P., Oct 1995, *Brushe* JB408 *et al.* (BRI); Taunton N.P., Oct 1996, *Porter* JB836 (BRI); Red Hill section of Taunton N.P., just N of Dingo, Aug 1998, *Melzer* 994 *& Clarke* (BRI).

***Distribution and habitat*:** *Solanum adenophorum* is endemic to Queensland, in the Dingo-Nebo-Clermont area, west and north-west of Rockhampton (**Map 13**). It is recorded mainly from brigalow (*Acacia harpophylla*) communities, but also from gidgee (*Acacia cambagei*) woodland. Soils are deep cracking clays.

***Phenology*:** flowers recorded in October; mature fruits recorded for May, September and October.

***Notes*:** *S. adenophorum* has very long petioles compared to most other Australian species. The longest petioles are on the lowermost leaves, hence it seems that the petioles continue to elongate after the leaf has fully expanded. The taxon known as *S. adenophorum* in New South Wales (Conn 1992) and Victoria (Jeanes 1999) is referable to *S. eremophilum* F.Muell. (Bean 2002a).

***Conservation status*:** Currently listed as 'Endangered' under the Queensland Nature

Conservation Act, 1992. It is threatened by habitat clearance, and by introduced weeds such as *Parthenium hysterophorus, Cenchrus ciliaris, Opuntia* spp. and *Acanthocereus tetragonus*. It is currently known only from a single location, *viz.* Taunton N.P.

Applying the IUCN guidelines (IUCN. 2001), a category of "Critically Endangered" is recommended (CR B2ab(iii,v)).

40. Solanum pusillum A.R.Bean **sp. nov.** Frutex prostratus vel fusus; aculei in ramulis foliis calycibusque praesentes; folia viridia, profunde lobata, in paginis superioribus stellis et digitis commixtis; petioli alati, longitudine 8–18% laminae aequantes; pili Type 2 in foliis calyce ovario styloque; inflorescentia pseudo-umbellata; corolla alba, 7–10 mm longa; fructus maturitate virides. **Typus:** Queensland. LEICHHARDT DISTRICT: western road, Junee State Forest, Junee Tableland, north of Dingo, 5 October 2002, *A.R. Bean* 19411 (holo: BRI).

Prostrate or sprawling, herbaceous resprouter, 0.1–0.3 m high. Juvenile stage absent. Adult branchlets brown or green; prickles 10–50 per decimetre, straight, acicular, 1–9 mm long, 10–16 times longer than wide; stellae sparse to dense, 0.8–1.2 mm diameter, stalks 0–0.1 mm long; lateral rays 4–7, porrect; central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent, or sparse. *Adult leaves* elliptical or ovate, deeply lobed throughout; lobes 2–4 on each side, acute or obtuse, lobing index 2.3–4; lamina 3–5.5 cm long, 1.4–2.5 cm wide, 1.6–2.2 times longer than broad, apex obtuse or acute, base cuneate, oblique part 0–3 mm long, obliqueness index 0–7 percent; petioles 0.8–1.8 cm long, 8–18% length of lamina, winged, prickles absent or present. *Upper leaf surface* green; prickles 10–50, straight, acicular, 2–8 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae very sparse to sparse, 0.8–1.7 mm apart, 0.3–1.1 mm across, sessile; lateral rays 1–4, porrect or ascending; central ray 1–4 times as long as laterals, not gland-tipped; finger hairs present, 0.5–3 mm apart, not gland-tipped, 0.8–1.3 mm long; Type 2 hairs present throughout, 0.1–0.4 mm apart. *Lower leaf surface* green, or yellowish; prickles 4–17, straight, acicular, present on midvein and lateral veins; stellae sparse to moderate, 0.2–1 mm apart, 0.7–1 mm diameter, stalks 0–0.1 mm long; lateral rays 4–7, porrect; central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.05–0.2 mm apart. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle absent; 1–3-flowered, strongly andromonoecious, flowers 5-merous; pedicels 3–6 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.4–0.6 mm thick at mid-point, prickles present. Calyx tube 1.5–2 mm long, lobes deltate, 1.5–3 mm long; prickles present at anthesis, 20–35 per flower, 2.5–6 mm long; stellae sparse to moderate, white, 0.7–1.1 mm across, sessile, lateral rays 4–8, central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla white, 7–10 mm long, deeply lobed, inner surface glabrous; anthers 3–4 mm long; ovary with Type 2 hairs only; functional style 4–4.5 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than or more than half length of mature fruit. Mature fruits 1 per inflorescence, globular, *c.* 15 mm diameter, green, 2-locular; placenta in cross-section sessile, semi-circular; mesocarp moist but not juicy; exocarp 0.8–1.3 mm thick; pedicels 12–18 mm long in fruit, 0.9–1.5 mm thick at mid-point; seeds pale yellow, 3.8–4 mm long. **Fig. 6, 26.**

***Specimens examined*: Queensland.** LEICHHARDT DISTRICT: Junee Tableland, N of Dingo, Nov 1990, *Bean* 2604 (BRI); near eastern road, Junee Tableland, N of Dingo, Oct 2002, *Bean* 19399 (BRI); eastern edge of S.F.236, SW of Blackwater, Nov 2002, *Bean* 19519 (BRI, MEL); ditto, *Bean* 19525 (BRI); S of Triumph Ck, *c.* 30 km SW of Blackwater, Nov 2002, *Bean* 19538 (BRI).

***Distribution and habitat*:** *Solanum pusillum* is endemic to Queensland. Known from two areas in the central east of the state (**Map 14**). It usually grows in shallow yellowish soil on the edges of low plateaux, where the dominant species may be *Acacia catenulata, Eucalyptus trachyphloia, E. tenuipes* or *E. exserta*.

***Phenology*:** Poorly known. Flowers and fruits are recorded for October and November.

***Notes*:** Closely related to *S. adenophorum*, but differing by having only stellate hairs on the

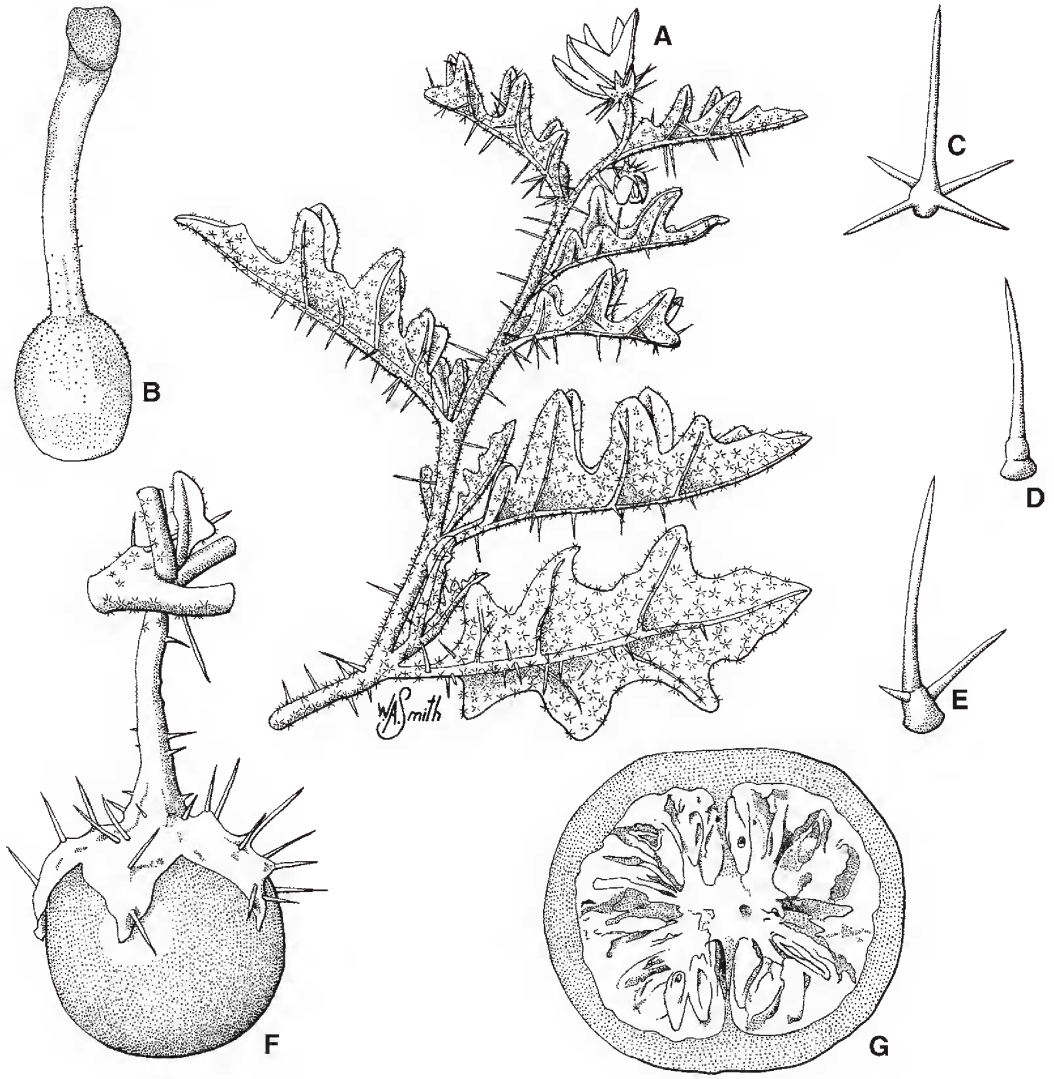

Fig. 26. ***Solanum pusillum***. A. flowering branchlet × 1. B. ovary and style × 9. C. stellate hair with 4 lateral rays, upper leaf surface × 30. D. finger hair, upper leaf surface × 30. E. stellate hair with 2 lateral rays, upper leaf surface × 30. F. mature fruit, calyx and pedicel × 2. G. transverse section of fruit × 3. all from *Bean* 19411.

branchlets and lower leaf surface, petioles 8–18% of lamina length (30–80% for *S. adenophorum*), presence of Type 2 hairs on the lower leaf surface and calyx, 1–3 flowered pseudo-umbellate inflorescence (4–8 flowered and pseudo-racemose for *S. adenophorum*) and style 4–4.5 mm long (6–7 mm for *S. adenophorum*).

***Conservation status*:** *S. pusillum* is known to exist in 7 subpopulations, of which four are on the Junee Tableland. It does not occur in any conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Near Threatened" is recommended.

***Etymology*:** From the Latin *pusillus* meaning tiny or puny, a reference to the small size of the plant.

41. Solanum graniticum A.R.Bean **sp. nov.** Repullulator herbaceus prostratus vel fusus; aculei in ramulis praesentes; folia adulta 1.2–2.6 cm longa, profunde vel non profunde lobata, stellis in pagina inferiore sparse praeditis; inflorescentia 1 vel 2-flora, pedunculo communi 0–1 mm longo; pedicelli sub anthesi 9–15 mm longi; calyx aculeis 18–50 praeditus; corolla malvina, non profunde lobata; fructus maturitate virides. **Typus:** Queensland. North Kennedy District: Cape Gloucester, SW of Montes Resort, 17 March 1997, *I.G. Champion* 1419 (holo: BRI; iso: MEL).

Solanum sp. (Gloucester Island G.N. Batianoff+ 9403312) in Henderson (2002).

Prostrate or sprawling, herbaceous resprouter, 0.15–0.3 m high. Juvenile stage absent. Adult branchlets yellow or brown; prickles 10–45 per decimetre, straight, acicular, 2.5–9 mm long, 10–16 times longer than wide; stellae dense, 0.25–0.5 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.3–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, shallowly to deeply lobed throughout; lobes 2 or 3 on each side, obtuse, lobing index 1.5–3; lamina 1.2–2.6 cm long, 0.6–1.3 cm wide, 1.6–2.4 times longer than broad, apex obtuse, base cuneate, oblique part 0–1 mm long, obliqueness index 0–4 percent; petioles 0.15–0.45 cm long, 13–22% length of lamina, prickles absent. *Upper leaf surface* green; prickles 1–3, straight, acicular, 1–5 mm long, prickles present on midvein only; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.3–1 mm apart, 0.1–0.3 mm across, sessile; lateral rays 5–8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 0–2, straight, acicular, absent or present on midvein only; stellae sparse to moderate, 0.4–0.7 mm apart, 0.25–0.4 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.5–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed or supra-axillary, solitary or pseudo-umbellate, common peduncle 0–1 mm long; 1 or 2-flowered, strongly andromonoecious, flowers 5-merous; pedicels 9–15 mm long at anthesis, same thickness throughout, 0.4–0.6 mm thick at mid-point, prickles present. Calyx tube 2.5–3 mm long, lobes deltate or rostrate, 2–5.5 mm long; prickles present at anthesis, 18–50 per flower, 1.5–5 mm long; stellae moderate to dense, transparent, 0.2–0.3 mm across, sessile, lateral rays 6–8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 9–14 mm long, shallowly lobed, inner surface glabrous; anthers 3.5–4.5 mm long; ovary with Type 2 hairs only; functional style 5.5–8.5 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles 2–5 mm long. Mature fruits 1 per inflorescence, globular, *c.* 15 mm diameter, green; mesocarp moist but not juicy; pedicels 15–27 mm long in fruit, 0.7–0.9 mm thick at mid-point; seeds pale yellow, 2.7–3.2 mm long. **Fig. 27.**

***Specimens examined*: Queensland.** North Kennedy District: ridge 1 km S of Mt Bertha, Gloucester Island, Mar 1994, *Batianoff* 9403312 *et al.* (BRI); SE Point, above Chinaman Rock, Gloucester Island, May 1994, *Batianoff* 940592 & *Dillewaard* (BRI); *c.* 1.5 km due E of Nelly Bay, Mar 1999, *Kemp* TH347 & *Allison* (BRI). South Kennedy District: lookout at Eungella Dam, W of Eungella, Feb 2003, *Bean* 20061 & *Champion* (BRI).

***Distribution and habitat*:** *Solanum graniticum* is endemic to Queensland. Found on Gloucester Island (near Bowen), and adjacent parts of the mainland, and with a disjunct occurrence at Eungella Dam (**Map 16**). It grows in open

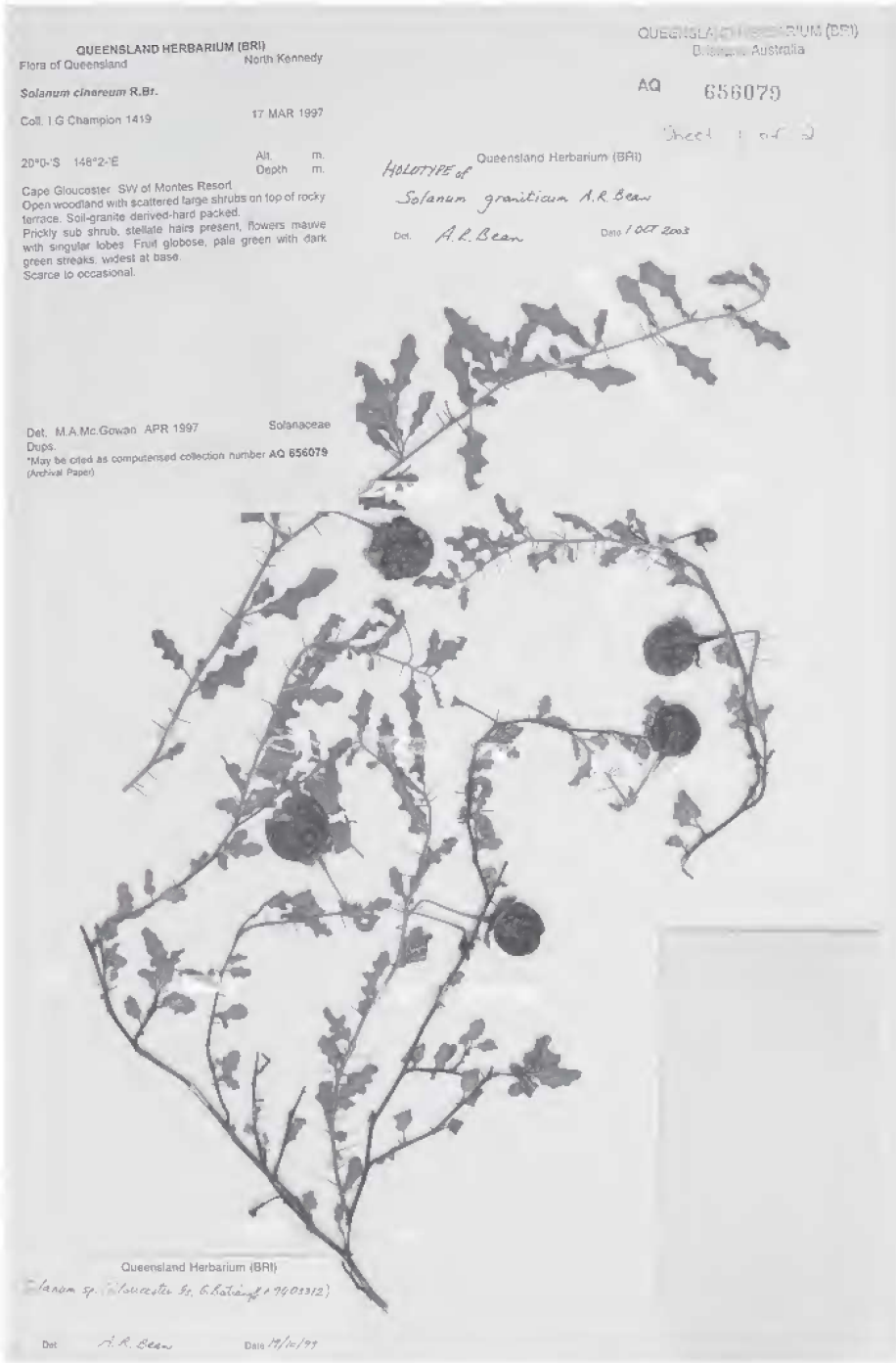

Fig. 27. Holotype of ***Solanum graniticum***.

eucalypt woodland on hillsides with shallow soil derived from granite or granodiorite.

***Phenology*:** Flowers are recorded for March; mature fruits for March and May.

***Notes*:** *S. graniticum* is closely related to *S. pusillum*, but *S. graniticum* differs by the relatively small leaves, petioles without wings, the lack of finger hairs and Type 2 hairs, the smaller stellae on all plant parts, the mauve, shallowly-lobed corolla, and the longer pedicels.

***Conservation status*:** *S. graniticum* is known from 4 locations, 3 of them in close proximity. It occurs in the Gloucester Island N.P.. Most populations are threatened by road and housing construction, weeds, and grazing. Applying the IUCN guidelines (IUCN. 2001), a category of "Endangered" is recommended (EN B1ab(ii,iii,v)+2ab(ii,iii,v); C1+2a(i)).

***Etymology*:** The epithet refers to the granite substrate where this species is found.

42. Solanum stenopterum A.R.Bean **sp. nov.** Repullulator herbaceus; folia adulta lobata vel integra utrinque viridia; petioli alati; stellae in pagina superiore folii radiis lateralibus 3–5 et radio centrali comparate longo praeditae; inflorescentia 1 vel 2-flora pedunculo communi carens; pedicelli 21–28 mm longi; aculei calycis praesentes; corolla purpurea. **Typus:** Queensland. Darling Downs District: Warrego Highway, 10 km NW of Oakey, 13 December 2001, *A.R. Bean* 18190 (holo: BRI (1 sheet + spirit); iso: AD, CANB, MEL, NSW).

Solanum sp. (Dalby R.F. Kelsey 56) in Henderson (2002).

Sprawling or erect, herbaceous resprouter, 0.2–0.4 m high. Juvenile stage absent. Adult branchlets green; prickles 7–15 per decimetre, straight, acicular, 2–8 mm long, 10–15 times longer than wide; stellae sparse, 0.4–1.2 mm diameter, sessile; lateral rays 4–8, porrect; central ray 0.7–1.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* linear to ovate, entire or shallowly to deeply lobed throughout; lobes 2 or 3 on each side, acute or obtuse, lobing index 1–5; lamina 4–7 cm long, 0.5–2.6 cm wide, 2.2–12 times longer than broad, apex acute, base cuneate, oblique part 0–3 mm long, obliqueness index 0–5 percent; petioles 0.5–1.3 cm long, 10–18% length of lamina, winged, prickles absent. *Upper leaf surface* green; prickles 3–15, straight, acicular, 1–4 mm long, prickles present on midvein only or present on midvein and lateral veins; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to moderate density, 0.8–2.5 mm apart, 0.3–1.1 mm across, sessile; lateral rays 3–5, porrect; central ray 1–3 times as long as laterals, not gland-tipped; finger hairs absent or present, 1–3 mm apart, not gland-tipped, 0.6–1.2 mm long; Type 2 hairs absent. *Lower leaf surface* green; prickles 1–15, straight, acicular, present on midvein only or present on midvein and lateral veins; stellae very sparse to moderate, 0.8–3 mm apart, 0.5–1 mm diameter, sessile; lateral rays 4–7, porrect; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, solitary or pseudo-umbellate, common peduncle absent; 1 or 2-flowered, strongly or weakly andromonoecious, flowers 5-merous; pedicels 21–38 mm long at anthesis, same thickness throughout, 0.5–0.7 mm thick at mid-point, prickles absent or present. Calyx tube 2–3 mm long, lobes deltate, 1.5–2.5 mm long; prickles present at anthesis, 5–40 per flower, 1–4 mm long; stellae sparse to dense, transparent, 0.3–0.6 mm across, sessile, lateral rays 2–6, central ray 1–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 14–18 mm long, shallowly lobed, inner surface glabrous; anthers 3.5–5 mm long; ovary with Type 2 hairs only; functional style 7.5–8.5 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes more than half length of mature fruit, prickles 2–4 mm long. Mature fruits 1 per inflorescence, globular, *c.* 10 mm diameter; pedicels 21–38 mm long in fruit, *c.* 1.5 mm thick at mid-point. **Fig. 28.**

Specimens examined: **Queensland.** Burnett District: *c.* 64 miles [103 km] WSW of Gayndah, Oct 1969, *McPherson* (BRI). Darling Downs District: *c.* 5 km SW of Dalby, Mar 1958, *Kelsey* 56 (BRI); Condamine River, 4–5 miles [6–8 km] S of Dalby, Sep 1958, *Kelsey* 64 (BRI); 'Burradoo', 50 km NE of Goondiwindi, Mar 1979, *Lahey* (BRI); Myall Park,

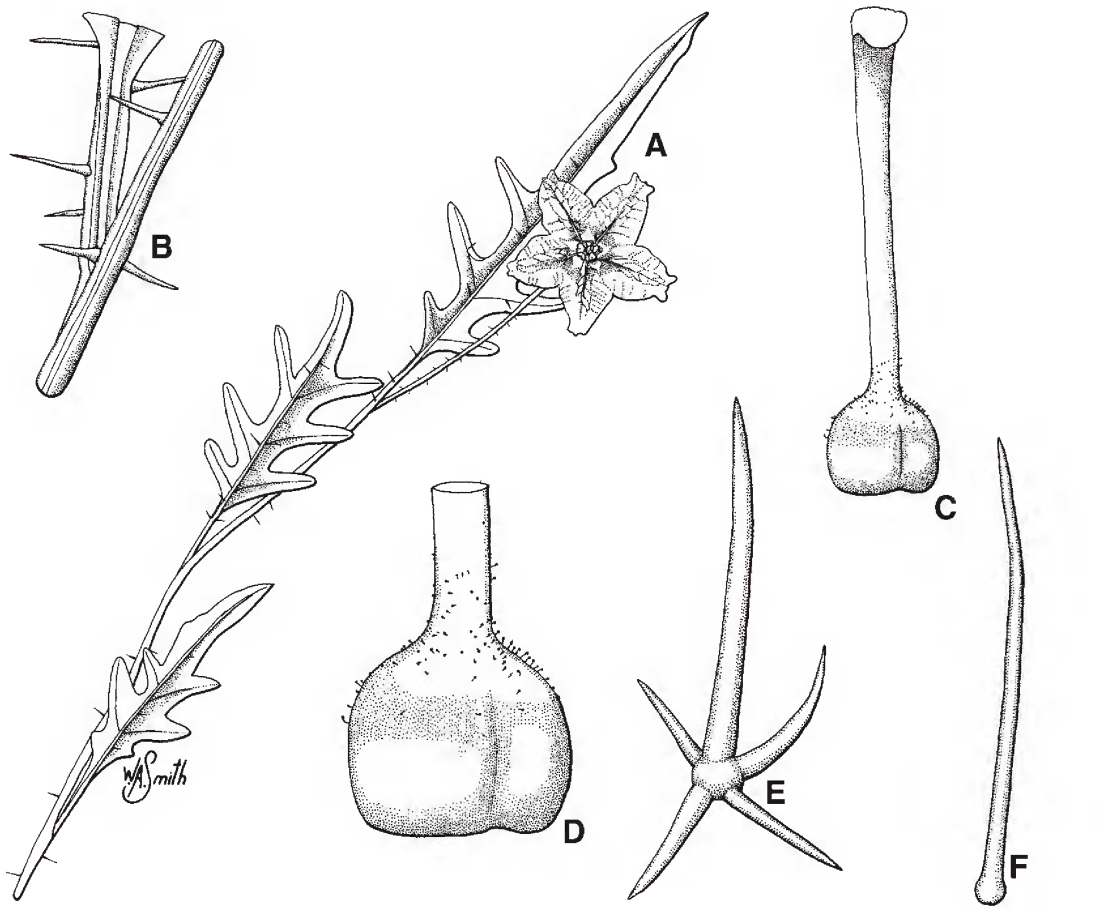

Fig. 28. ***Solanum stenopterum***. A. flowering branchlet × 0.8. B. base of leaf showing winged petiole × 3. C. ovary and style × 6. D. ovary with Type 2 hairs × 12. E. stellate hair with 4 lateral rays, upper leaf surface × 60. F. finger hair, upper leaf surface × 60. all from *Bean* 18190.

Glenmorgan, Dec 1984, *Gordon* 8887 (AD, BRI, CANB); 6 km SE of Cecil Plains, Feb 1995, *Fensham* 2012 (BRI); Warrego Highway, *c.* 7 km W of Jackson, Jan 2000, *McDonald* KRM262 (BRI); SE corner of Oakey Army Airfield, Dec 2001, *Menkins* ILM76 (BRI); 4 km E of Cecil Plains, Jan 2002, *Franzmann* 66 (BRI). **New South Wales.** North West Slopes: Ashford, Mar 1908, *Hayes s.n.* (NSW).

***Distribution and habitat*:** In Queensland, *Solanum stenopterum* extends from Gayndah to Moonie, and west to Glenmorgan and Yuleba (**Map 15**), and there is an old collection from Ashford in New South Wales. It inhabits grassland, Belah forest or *Eucalyptus populnea* woodland, on clayey soil.

***Phenology*:** Flowers are recorded from October to March; mature fruits recorded for March.

***Notes*:** *S. stenopterum* differs from *S. lacunarium* by the more sparsely distributed, longer and more acicular prickles; smaller leaf lobing index (sometimes entire); stellae very sparse to moderate on lower leaf surface (*vs.* very dense for *S. lacunarium*); stellae consistently with 3–5 lateral rays on upper leaf surface (*vs.* 7–10 lateral rays for *S. lacunarium*); central ray relatively long; inflorescences comprising 1 or 2 flowers and common peduncle absent (*vs.* 5–7 flowers, common peduncle 26–46 mm long for *S. lacunarium*).

In *S. stenopterum*, the style extends further beyond the anthers than in most other species. It very rarely sets fruit (pers. obs.; I. Menkins pers. comm.). Only 2 fruits are present

in the collections at BRI, and both of these are insect damaged.

***Conservation status*:** Currently listed as "Vulnerable" under the *Queensland Nature Conservation Act 1992.*

Solanum stenopterum is known from 5 locations, none of which is protected within a conservation reserve. It is threatened by land clearance, agricultural practices, weed encroachment, and mowing of road reserves, where most of the existing stands are located. Applying the IUCN guidelines (IUCN. 2001), a category of "Endangered" is recommended (EN A3ce; B2ab(ii,iii,v)).

***Etymology*:** From the Greek *stenos* meaning 'narrow' and *pteron* meaning 'wing'. This is in reference to the proximal extension of the leaf lamina resulting in a winged petiole.

43. Solanum lacunarium F.Muell., Trans. Philos. Soc. Victoria 1: 18 (1854). **Type:** near the junction of the rivers Darling and Murray, December 1853, *F. Mueller* (lecto: MEL [MEL11745]), *fide* Symon (1981).

***Illustration*:** Cunningham *et al.* (1981: 593); Symon (1981: 185).

Prostrate or sprawling, herbaceous resprouter, 0.2–0.4 m high. Juvenile stage absent. Adult branchlets grey or brown; prickles 5–35 per decimetre, straight, acicular or broad-based, 0.5–5 mm long, 5–9 times longer than wide; stellae sparse, 0.25–0.3 mm diameter, sessile; lateral rays 8–9, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, deeply lobed throughout; lobes 3–5 on each side, obtuse, lobing index 5–12; lamina 2.5–6.5 cm long, 1.3–3.5 cm wide, 1.8–2.2 times longer than broad, apex obtuse, base cuneate or obtuse, oblique part 0–2 mm long, obliqueness index 0–4 percent; petioles 0.9–3.2 cm long, 35–55% length of lamina, winged, prickles present. *Upper leaf surface* green; prickles 35–50, straight, broad-based, 1–4 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse, 0.4–1.3 mm apart, 0.2–0.3 mm across, sessile; lateral rays 7–10, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white; prickles 6–20, straight, broad-based, prickles present on midvein only or present on midvein and lateral veins; stellae very dense, 0.05–0.1 mm apart, 0.3–0.4 mm diameter, sessile; lateral rays 8–9, porrect; central ray 0–0.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 26–46 mm long, rachis prickles present; 5–7-flowered, weakly andromonoecious, flowers 5-merous; pedicels 7–18 mm long at anthesis, same thickness throughout, 0.4–0.8 mm thick at mid-point, prickles absent or present. Calyx tube 1.5–2.5 mm long, lobes deltate, 1–2 mm long; prickles present at anthesis, 15–25 per flower, 0.5–3 mm long; stellae moderate to dense, white, 0.2–0.3 mm across, sessile, lateral rays 7 or 8, central ray 0–0.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 8–10 mm long, rotate, inner surface glabrous; anthers 3.5–4.5 mm long; ovary with stellate hairs only; functional style 5–7.5 mm long, erect, with stellate and Type 2 hairs, stellae 0.25–0.35 mm across, lateral rays 4–8, central ray 0–0.4 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 1–3 mm long. Mature fruits 1–3 per inflorescence, globular or ellipsoidal, 12–15 mm diameter; pedicels 14–21 mm long in fruit, 0.9–1.1 mm thick at mid-point. *Lagoon Nightshade.*

***Specimens examined*: Queensland.** Maranoa District: Dirranbandi, *anno* 2000, *Christodoulou* (BRI). **New South Wales.** North Far Western Plains: Arrara–Lake Eliza, Oct 1912, *Boorman s.n.* (NSW); Gidgee Tank, Mount Wood, Tibooburra, Oct 1949, *Constable* 10489 (NSW); floodplain of Cuttaburra Channels, 35 km NE of Yantabulla, Nov 1979, *Paijmans* 3282 (CANB).

***Distribution and habitat*:** In Queensland, *Solanum lacunarium* is known from a single collection near Dirranbandi (**Map 15**). It occurs widely in semi-arid parts of New South Wales, Victoria and South Australia. The Queensland record was from a grassy plain with Mitchell Grass (*Astrebla* spp.) and scattered *Eucalyptus coolabah.*

***Phenology*:** Flowers and fruits are recorded for January and October.

***Notes*:** The bright orange prickles borne on the branchlets and both leaf surfaces of *S. lacunarium* are distinctive.

Its habitat is similar to that of *S. stenopterum*, but *S. lacunarium* occurs in areas of much lower rainfall.

***Conservation status*:** Not considered at risk in an Australian context, although its occurrence in Queensland is probably very limited.

Group 25B (S. pugiunculiferum group), here defined; related to Group 25 (*S. hystrix* group) of Whalen (1984)

Large stems hollow; stellate and finger hairs absent; prickles straight, broad-based; adult leaves deeply lobed, obliqueness index 15–24%; prickles present on both leaf surfaces; corolla 4–5 mm long; anthers 1.5–2.5 mm long; calyx with 0–4 prickles; mesocarp dry in mature fruits.

1 species endemic to Australia, and indigenous to Queensland.

44. Solanum pugiunculiferum C.T.White, Proc. Roy. Soc. Queensland 53: 225 (1942). **Type:** Queensland. BURKE DISTRICT: Settlement Creek, November 1922, *L.J. Brass* 244 (holo: BRI).

***Illustration*:** Symon (1981: 100)

Prostrate or sprawling, herbaceous resprouter, 0.2–0.6 m high. Juvenile stage absent. Adult branchlets grey, yellow or brown; prickles 10–200 per decimetre, straight, acicular or broad-based, 2–16 mm long, 6–8 times longer than wide; stellae absent; finger hairs absent; Type 2 hairs absent, or sparse. *Adult leaves* elliptical or ovate, deeply lobed throughout; lobes 2 or 3 on each side, acute, lobing index 2.3–10; lamina 1.6–4.5 cm long, 1.1–2.8 cm wide, 1.4–1.7 times longer than broad, apex acute, base obtuse or cordate, oblique part 0.5–11 mm long, obliqueness index 2–24 percent; petioles 0.5–1 cm long, 20–30% length of lamina, prickles absent or present. *Upper leaf surface* green or grey-green; prickles 3–10, straight, broad-based, 1–17 mm long, prickles present on midvein only or present on midvein and lateral veins; stellate hairs absent; finger hairs absent; Type 2 hairs present only in vein depressions. *Lower leaf surface* green; prickles 2–8, straight, broad-based, prickles present on midvein only or present on midvein and lateral veins; stellae absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 2–4 mm long, rachis prickles present; 2–5-flowered, with all flowers bisexual and 5-merous; pedicels 3–5 mm long at anthesis, same thickness throughout, 0.4–0.6 mm thick at mid-point, prickles absent or present. Calyx tube 1–1.5 mm long, lobes deltate, 0.5–1 mm long; prickles present at anthesis, 1–4 per flower, 2–6 mm long; stellae absent; finger hairs absent; Type 2 hairs absent. Corolla mauve, 4–5 mm long, rotate, inner surface glabrous; anthers 1.5–2.5 mm long; ovary glabrous; functional style 2.5–3.5 mm long, erect, glabrous. *Fruiting calyx* with lobes less than half length of mature fruit, prickles present, 2.5–9 mm long. Mature fruits 1–4 per inflorescence, globular, 8–11 mm diameter, brown or yellow; mesocarp dry; pedicels 5–8 mm long in fruit, 0.7–1 mm thick at mid-point; seeds pale yellow, 3–3.8 mm long.

***Specimens examined*: Northern Territory.** Red Lily Lagoon, 8 miles [13 km] E of 'Elsey' HS, Oct 1958, *Chippendale* 5064 (BRI); 3 km E of 'Bing Bong' HS, Sep 1985, *Latz* 10243 (BRI). **Queensland.** BURKE DISTRICT: Burketown, May 1919, *Higgins* (BRI); Normanton, May 1935, *Blake* 8989 (BRI); Karumba, Jun 1966, *Pedley* 2103 (BRI); 6 miles [10 km] SE of Burketown, Jun 1967, *Symon* 4998 (BRI); 1.6 km SW of Burketown, Jul 1974, *Ollerenshaw & Kratzing* 1373 (BRI, CANB); Denham Island, north end, just W of Mornington Island, Sep 1981, *Fosberg* 62034 (CANB); 32 km NNE of 'Inverleigh' HS, duckhole, Jul 1987, *Dalliston* HC137 (BRI); Karumba, Sep 1998, *Gunther* MG107 (BRI). COOK DISTRICT: Mapoon, N of Weipa, Sep 1980, *Godwin* A55 (BRI); *c.* 7 km N of 'Inkerman' HS, Jun 1990, *Neldner* 2917 & *Clarkson* (AD, BRI, NSW, QRS); road from Kowanyama to 'Topsy', *c.* 16 km from 'Topsy', Oct 1999, *Thomas & Lansdown* (BRI).

***Distribution and habitat*:** In Queensland, *Solanum pugiunculiferum* is found around the Gulf of Carpentaria (**Map 13**), but it also occurs in Northern Territory and the Kimberley of Western Australia. It grows near the coast on heavy clay soils, sometimes in areas that are periodically flooded by very high tides. In the latter situation, it is associated with *Sporobolus virginicus* grassland.

***Phenology*:** Flowers recorded from May to September; mature fruits from May to October, plus a single record in January.

***Notes*:** *Solanum pugiunculiferum* is a highly distinctive species, worthy of the monotypic sectional status accorded it by Symon (1981). It is totally without stellate hairs or finger hairs, it has hollow stems, very oblique leaf bases, tiny flowers (corolla 4–5 mm long) with disproportionately long filaments, and fruits that are quite dry at maturity. The often saline habitat is also very unusual for a *Solanum*.

Solanum oligandrum Symon, recently described from tropical Western Australia (Symon 2001) does not appear to be particularly closely related to *S. pugiunculiferum*.

White (1942) cited two collections in the protologue, without any indication of a type. However, on the Brass 244 sheet, he has written "Solanum pugiunculiferum C.T.White, Type". Hence the choice of a lectotype is unnecessary.

***Conservation status*:** Moderately widespread. Not considered at risk.

Group 27 (S. ellipticum group) of Whalen (1984)

Calyx prickly, not accrescent in fruit (100%); corolla shallowly to deeply lobed (100%); inflorescences andromonoecious, male flowers and bisexual flowers same size and prickliness (100%); branchlet stellae dense to very dense (100%); fruits green to yellowish-green, mesocarp moist but not succulent (100%); branchlets prickly (87%); adult leaves entire (87%); upper leaf suface with dense to very dense stellate hairs (71%).

10 species endemic to Australia; 8 species indigenous to Queensland.

45. Solanum ellipticum R.Br., Prodr. 446 (1810). *S. ellipticum* var. *ellipticum* Benth. Fl. Austral. 4: 464 (1868); *S. ellipticum* f. *ellipticum* Wawra, Itin. Princ. S. Coburgi 100 (1883); *S. ellipticum* var. *typicum* Domin, Biblioth. Bot. 89: 588 (1929), *nom. inval.* **Type:** [Queensland. Port Curtis District:] "Broadsound", 25 September 1802, *R. Brown* (lecto: BM; isolecto: MPU).

Solanum ellipticum var. *chillagoense* Domin, Biblioth. Bot. 89: 588 (1929). **Type:** Queensland. Cook District: near Chillagoe, February 1910, *K. Domin* (syn: PR [2 collections], photos at BRI).

Solanum ellipticum f. *albiflora* Domin, Biblioth. Bot. 89: 588 (1929). **Type:** Queensland. Cook District: near Chillagoe, February 1910, *K. Domin* (holo: PR?).

Solanum cleistogamum Symon, Trans. & Proc. Roy. Soc. South Australia 95: 227 (1971), **syn. nov. Type:** Western Australia. 20 miles [32 km] north of Onslow, 1 July 1967, *D.E. Symon* 5418 (holo: PERTH; iso: AD, CANB, K, L).

Solanum sp. (Newcastle Range D.E. Symon 4907) in Henderson (2002).

[*S. dianthophorum auct., non* Dunal]

***Illustration*:** Cunningham *et al.* (1981: 592); Symon (1981: 192), as *S. dianthophorum*.

Prostrate, herbaceous resprouter or rhizomatous perennial shrub, 0.1–0.3 m high. Juvenile stage absent. Adult branchlets white to mauve or brown; prickles 10–250 per decimetre, straight, acicular, 1–8 mm long, 7–15 times longer than wide; stellae dense to very dense, 0.5–0.8 mm diameter, stalks 0–0.3 mm long; lateral rays 7–12, porrect or ascending; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire; lamina 3.5–14 cm long, 1.5–5.2 cm wide, 1.7–2.9 times longer than broad, apex obtuse or acute, base cuneate or obtuse or cordate, oblique part 0–9 mm long, obliqueness index 0–6 percent; petioles 0.8–4.6 cm long, 20–65% length of lamina, prickles present. *Upper leaf surface* grey-green or grey; prickles 2–20, straight, acicular, 1–7 mm long, prickles present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae density moderate to very dense, 0.1–0.5 mm apart, 0.4–0.7 mm across, stalks 0–0.3 mm long; lateral rays 7 or 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–40, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae dense to very dense, 0.05–0.3 mm apart, 0.5–0.8 mm diameter,

stalks 0–0.4 mm long; lateral rays 7 or 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 0–40 mm long, rachis prickles present; 1–9-flowered, weakly andromonoecious or with all flowers bisexual, flowers 5-merous; pedicels 4–16 mm long at anthesis, same thickness throughout, 0.7–0.9 mm thick at mid-point, prickles absent or present. Calyx tube 1.5–3 mm long, lobes deltate or attenuate, 2–10 mm long; prickles present at anthesis, 5–50 per flower, 1–5 mm long; stellae very dense, white to brown, 0.4–1 mm across, stalks 0–0.4 mm long, lateral rays 7 or 8, central ray 0.8–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white, mauve or purple, 5–12 mm long, shallowly or deeply lobed, inner surface glabrous or sparsely stellate-hairy; anthers 3–6 mm long; ovary glabrous, or with Type 2 hairs only; functional style 5.5–10 mm long, erect or sigmoid, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles 1–5 mm long. Mature fruits 1–5 per inflorescence, globular, 13–17 mm diameter, yellowish-green or green, 2- or 4-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.6–2.1 mm thick; pedicels 7–19 mm long in fruit, 0.8–2.1 mm thick at mid-point; seeds pale yellow, 2.2–2.7 mm long.

***Selected specimens*: Queensland.** Cook District: Guguyalangi Gallery, 13 km S of Laura on the Peninsula Development road, Jun 1981, *Clarkson* 3669 (AD, BRI, PERTH, QRS); Royal Arch cave, Chillagoe N.P., Mar 2000, *McDonald* KRM337 (BRI). North Kennedy District: Mt Remarkable, near Pentland, Jun 1934, *Blake* 6124 (BRI); S side of Red Falls road, 42 km NW of Charters Towers, Jul 1989, *Jobson* 672 (BRI, MEL). Gregory North District: 'Kamaran Downs', 10 km NNW of Bedourie, Jun 1995, *Edmunds* 23 (BRI). Mitchell District: 61 km E of Barcaldine on road to Jericho, Oct 1993, *Lepschi & Slee* 1173 (AD, BRI, CANB); 4 km SE of 'Lake Dunn' HS, NE of Aramac, Feb 1994, *Bean* 7504 & *Forster* (AD, BRI, DNA). South Kennedy District: 13 miles [21 km] SW of 'Alpha' station, Oct 1964, *Adams* 1339 (BRI, CANB); 11 km NW of Belyando Crossing on edge of Gregory Development road, Jun 1992, *Thompson* BUC818 & *Sharpe* (AD, BRI). Leichhardt District: 'Pamaroo', 25 miles [40 km] SE of Injune, Apr 1961, *Johnson* 2129 (BRI); 'Wandobah', *c.* 1 km NE of Dingo, Jul 1988, *Anderson* 4492 (BRI). Port Curtis District: Orange Creek, *c.* 20 miles [32 km] NW of Biloela, Jun 1959, *Johnson* 857 (BRI); 4 km WSW of St Lawrence, Apr 2000, *Bean* 16250 (BRI, MEL). Gregory South District: 10 miles [16 km] W of Betoota, Jul 1936, *Blake* 12184 (BRI). Warrego District: *c.* 11 km SW of Thargomindah, on road to Hungerford, Sep 1973, *Henderson* H2061 & *Boyland* (AD, BRI); 0.4 km W of Gee Gee Gap, Mt Moffatt N.P., Dec 1997, *Bean* 12905 (BRI). Maranoa District: *c.* 41 km along Shirlo road, NW of Bollon, Mar 2001, *Bean* 17543 (BRI). Burnett District: 'Neaavie', NE of homestead towards Barambah Creek, Aug 1996, *Grimshaw* PG2536 & *Turpin* (BRI); *c.* 6 km NE of Allies Creek and 7.5 km SW of 'Weir Weir', Jul 1998, *Pollock* ABP617 & *Dean* (BRI). Wide Bay District: Bingera, Dec 1896, *J.F. Bailey* (BRI). Darling Downs District: 8 km WSW of Oakey, Apr 1994, *Fensham* 1444 (BRI); 14 km N of Goondiwindi, towards Moonie, Feb 1996, *Bean* 9907 (BRI, MEL, NSW). Moreton District: Gatton, Nov 1916, *Bick s.n.* (BRI); 2 km ESE of Laidley, Jun 2002, *Bean* 19062 (BRI). **New South Wales.** North West Plains: 4 km SSW of 'The Glen' HS, *c.* 70 km W of Moree, Jan 1999, *Wannan* 1036 *et al.* (AD, BRI, NSW). North Far Western Plains: Urisino–Yamba station road, 30 miles [48 km] W of Wanaaring, Oct 1963, *Constable* 4583 (BRI, NSW); Golden Gully mining site, adjacent to Deadhorse Gully camping area, 1 km N of Tibooburra, Sturt N.P., Sep 1989, *Coveny* 13598 *et al.* (AD, BRI, MO, NSW).

***Distribution and habitat*:** *Solanum ellipticum* occurs throughout Queensland, except for the north-west, Cape York Peninsula and much of the east coast (**Map 18**). It inhabits eucalypt woodlands, Lancewood communities, semi-evergreen vine thicket and Mulga woodlands. Soils vary greatly from sands to heavy clays.

***Phenology*:** Flowers and fruits are recorded for every month of the year.

Notes: On the date of collection of the type of *Solanum ellipticum*, Robert Brown was botanising near the mouth of the Styx River, ESE of St Lawrence (Vallance *et al.* 2001).

S. ellipticum is probably the most taxonomically difficult species in Australia. It is common and widespread, but also highly variable. There are some (ill-defined) geographical variants, while plants growing side by side in natural habitat can be quite different in morphology *e.g.* prickliness, leaf colour, flower colour, indumentum density. Symon (1981) highlighted its taxonomic difficulties, and my own efforts to classify its variation have largely failed.

Specimens of *S. cleistogamum* (including the holotype) borrowed from PERTH are a very good match for material found in eastern Queensland, where the type of *S. ellipticum* was collected, and I do not think it is possible to

maintain the former as a distinct taxon. The Western Australian specimens do generally have longer, consistently glabrous prickles, long petioles and leaves with an obtuse apex, but there is no qualitative difference. The perceived cleistogamous habit was apparently a major factor in Symon's decision to name *S. cleistogamum*. However, the occurrence of cleistogamy does not seem sufficient to warrant the recognition of a separate species. It is very difficult to assess the degree of cleistogamy in any specimen in the herbarium, nor is it easy in the field. Perhaps cleistogamy occurs throughout the range of *S. ellipticum*, and indeed I have observed it on occasion for *S. ellipticum* in Queensland. The other key morphological characters given by Symon (1981: 34) for *S. cleistogamum* (stems sprawling; corolla 1–1.5 cm diameter; mature berry pale yellow-green or slightly purplish) apply equally well to *S. ellipticum* from around its type locality. The alternative statement (which eventually leads to *S. ellipticum* in the key) starts with "stems erect", but *S. ellipticum* is always prostrate or procumbent.

***Conservation status*:** Widespread. Not considered at risk.

46. Solanum dianthophorum Dunal, Hist. Nat. Solanum 183 (1813), *nom. nov.; S. biflorum* R.Br., Prodr. 445 (1810), *nom. illeg., non* Lour. (1790). **Type:** [Queensland. Port Curtis District:] "Port II", undated [Port Clinton, 21–23 August 1802], *R. Brown* (holo: BM [Bennett No. 2668]).

Prostrate? shrub. Juvenile stage unknown. Adult branchlets rusty or brown; prickles absent; stellae very dense, 0.4–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 8–13, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 1.5–3.5 cm long, 0.9–1.8 cm wide, 1.9–2.4 times longer than broad, apex obtuse or acute, base obtuse or cordate, oblique part 0–1.5 mm long, obliqueness index 0–4 percent; petioles 0.4–0.85 cm long, 20–25% length of lamina, prickles absent. *Upper leaf surface* grey-green; prickles 0–2, straight, acicular, 0.5–1.5 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense, 0.1–0.2 mm apart, 0.3–0.4 mm across, sessile; lateral rays 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* yellowish; prickles absent; stellae very dense, 0.05–0.15 mm apart, 0.3–0.4 mm diameter, stalks 0–0.1 mm long; lateral rays 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle absent, rachis prickles absent; 2–4-flowered, flowers 5-merous; pedicels 4–5 mm long at anthesis, same thickness throughout, *c.* 0.5 mm thick at mid-point, prickles absent. Calyx tube *c.* 1.5 mm long, lobes attenuate, *c.* 3 mm long; prickles present at anthesis, 1–4 per flower, 0.5 mm long; stellae very dense, brown or rusty, 0.3–0.45 mm across, stalks 0–0.1 mm long, lateral rays 8, central ray 0.6–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla *c.* 7 mm long, deeply lobed, inner surface glabrous; anthers *c.* 3.9 mm long. *Fruiting calyx* with lobes less than half length of mature fruit, prickles present, 0.5–1 mm long. Mature fruits 1 per inflorescence, globular, 9–10 mm diameter (maturity unknown); pedicels 7–12 mm long in fruit, 0.9–1.2 mm thick at mid-point. **Fig. 29.**

***Specimens examined*:** known only from the type.

***Distribution and habitat*:** The type collection of *Solanum dianthophorum* was from Port Clinton, now part of the Shoalwater Bay Military Reserve, N of Rockhampton (**Map 16**). Brown, on the specimen label, recorded the habitat as "*arenosus prope littus*" (sandy area near beach).

***Phenology*:** Brown's collection, made in the month of August, bears flowers and fruits, but the state of maturity of the fruits is unknown.

***Notes*:** The type of *S. biflorum* R.Br. (on which *S. dianthophorum* is based) differs from the hundreds of available *S. ellipticum* specimens in several respects. These differences are: the smaller stellae on the branchlets, upper leaf surface and lower leaf surface; the leaves only 1.5–3.5 cm long (3.5–14 cm for *S. ellipticum*); the lack of prickles on the branchlets and petioles; the shorter petioles; and the calyx less

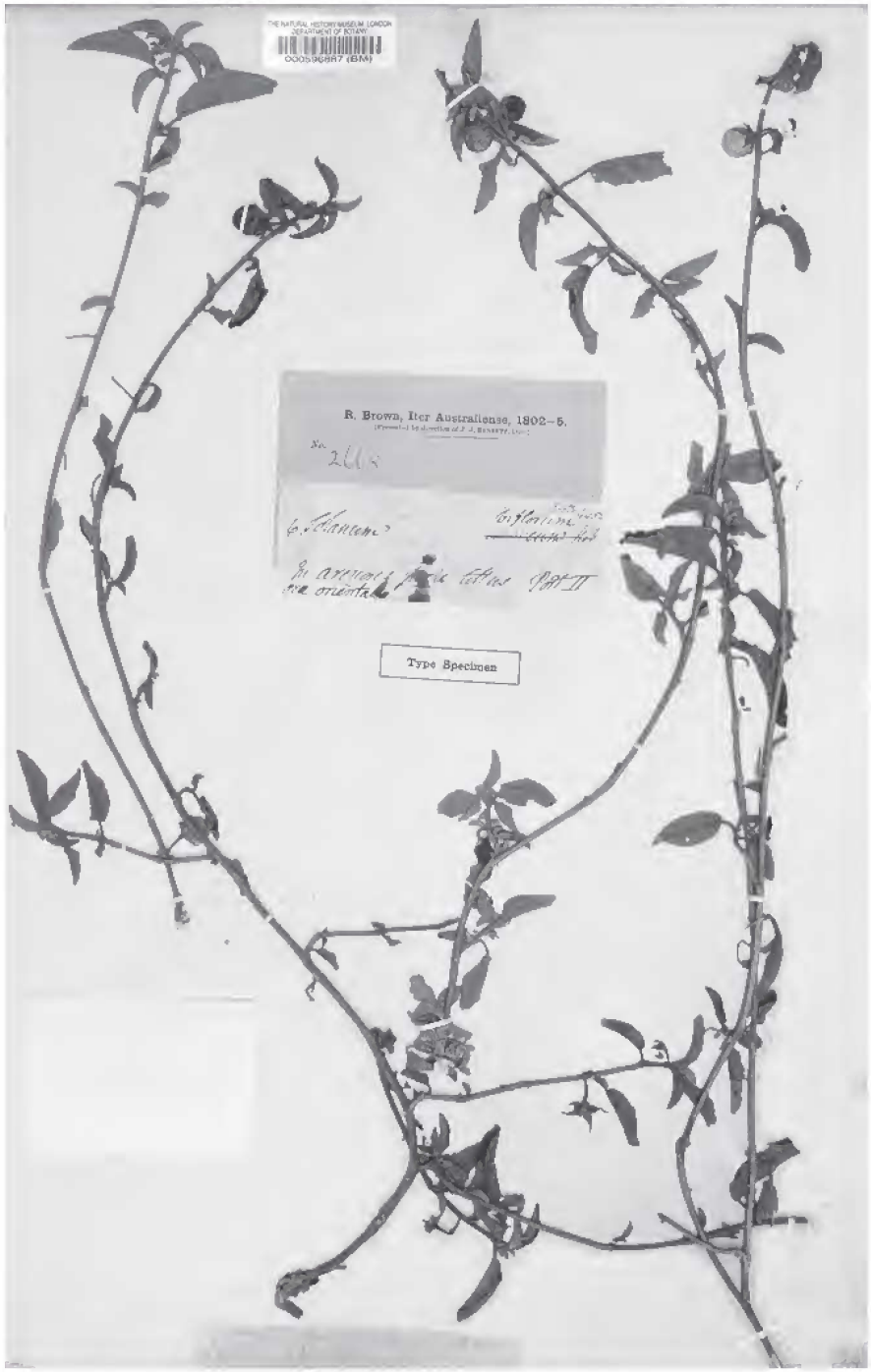

Fig. 29. Holotype of ***Solanum dianthophorum***.

than half the fruit length and with 1–4 tiny prickles (calyx > half fruit length, with 5–50 stout prickles for *S. ellipticum*).

No other collections are known which resemble this specimen. Bentham (1868) cited two other specimens for *S. dianthophorum*, *i.e.* "Bay of Inlets" Banks & Solander, and "Percy Islands" A. Cunningham, but I have not seen these.

Either *S. dianthophorum* is a very restricted endemic, or the type represents an extreme form of *S. ellipticum*. A field survey around Port Clinton should clarify the matter.

***Conservation status*:** Data deficient.

47. Solanum crebrispinum A.R.Bean **sp. nov.** Frutex perennis erectus, ramulis teretibus aculeis 180–420 per decimetrum; folia ovata, integra; pagina superiore aculeis praedita et dense stellato-pilosa; stellae 0.8–1.2 mm diametro, pedicellis 0.1–0.9 mm longis; pagina inferior folii densissime stellato-pilosa, floccosiuscula; calyx aculeis 50–70 validissimis praeditus, stellis proximale affixis; lobi calycis attenuati; stylus functionalis tantum pilis Type-2 praeditus. **Typus:** Queensland. South Kennedy District: 23 km SE of 'Teamass' Homestead, 10 June 1992, *E.J. Thompson* BUC457 & *P.R. Sharpe* (holo: BRI; iso: AD).

Erect, rhizomatous perennial shrub, 0.3–0.5 m high. Juvenile stage unknown. Adult branchlets yellow or rusty; prickles 180–420 per decimetre, straight, acicular, 2–11 mm long, 11–15 times longer than wide; stellae very dense, 0.9–1.2 mm diameter, stalks 0–1 mm long; lateral rays 6–8, porrect or ascending; central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, entire; lamina 5–9.5 cm long, 2.8–5.5 cm wide, 1.6–1.8 times longer than broad, apex obtuse, acute or acuminate, base obtuse or cordate, oblique part 0–3 mm long, obliqueness index 0–6 percent; petioles 1.1–4.4 cm long, 20–45% length of lamina, prickles present. *Upper leaf surface* grey-green; prickles 3–35, straight, acicular, 1–5 mm long, prickles present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae dense, 0.2–0.4 mm apart, 0.8–1.2 mm across, stalks 0.1–0.9 mm long; lateral rays 7 or 8, porrect or ascending; central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* yellowish; prickles 5–20, straight, acicular, present on midvein only or present on midvein and lateral veins; stellae dense to very dense, 0.05–0.25 mm apart, 0.7–1.2 mm diameter, stalks 0–1 mm long; lateral rays 6–8, porrect or ascending; central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–25 mm long, rachis prickles present; 3–5-flowered, flowers 5-merous; pedicels 4–6 mm long at anthesis, same thickness throughout, 0.9–1.2 mm thick at mid-point, prickles present. Calyx tube 1.5–2 mm long, lobes attenuate, 3–5.5 mm long; prickles present at anthesis, 50–70 per flower, 2–6 mm long; stellae very dense, yellow or white, 0.7–0.9 mm across, stalks 0–0.7 mm long, lateral rays 7 or 8, central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 8–10 mm long, shallowly lobed, inner surface glabrous; anthers *c.* 3.8 mm long; ovary with Type 2 hairs only; functional style *c.* 5.8 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes more than half length of mature fruit, prickles 3–6 mm long. Mature fruits 1 or 2 per inflorescence, globular, 14–16 mm diameter, yellowish-green or green; mesocarp moist but not juicy; pedicels 8–9 mm long in fruit, 1.5–1.8 mm thick at mid-point. **Fig. 30.**

***Specimens examined*: Queensland.** South Kennedy District: on crest of Great Dividing Range, *c.* 25 km NNW of 'Yarrowmere' HS, *c.* 92 km SSE of Pentland, Oct 1983, *Henderson* H2821 *et al.* (BRI); on Llanarth Back Range road, 9.4 km S of junction with Scartwater road, May 1991, *Neldner* 3525A & *Thompson* (BRI); 4 km N of 'Moonoomoo' in headwaters of Carmichael Creek, Apr 1992, *Thompson* BUC247 & *Simon* (BRI); 10 km W of 'St Anns' HS, Jun 1992, *Thompson* BUC454 & *Sharpe* (BRI).

***Distribution and habitat*:** *Solanum crebrispinum* is endemic to Queensland. Apparently restricted to the Lake Buchanan area south of Charters Towers (**Map 17**). It grows on sandstone ridges or "jump-ups" with *Eucalyptus similis, E. leichhardtii* or *Acacia*

Fig. 30. Holotype of ***Solanum crebrispinum***.

shirleyi. One specimen records *Eucalyptus brownii* as the dominant tree.

***Phenology*:** Poorly known. Flowers are recorded for April, June and October; fruits are recorded for April and October.

***Notes*:** *S. crebrispinum* is related to *S. ellipticum*, but differs by the erect habit, the branchlet stellae 0.9–1.2 mm across (0.5–0.8 mm for *S. ellipticum*) on stalks up to 1.0 mm long (up to 0.3 mm long for *S. ellipticum*), the presence of protostellae on the upper leaf surface, normal stellae 0.8–1.2 mm across (0.4–0.7 mm for *S. ellipticum*), on very thick stalks 0.1–0.9 mm long (thin stalks 0–0.3 mm long for *S. ellipticum*), and the 50–70 calyx prickles (5–50 for *S. ellipticum*). On the branchlets, upper and lower leaf surface, and on the calyx, the central ray of the stellae is 1–1.7 times as long as the laterals; this compares with 0.5–1 times for *S. ellipticum*.

***Conservation status*:** Collection density in this area is low. Not considered at risk.

***Etymology*:** From the Latin *crebra* - abundant, and *spina* - spines or prickles. This refers to the abundant prickles on the branchlets and calyx.

48. Solanum senticosum A.R.Bean **sp. nov.** Frutex perennis erectus; ramuli teretes brunnei vel ferruginei, aculei 180–400 per decimetrum; folia ovata, integra, ad basim cuneata; pagina inferior folii ferruginea, stellis radio centrali 0.6–1.2plo lateralibus longiore; inflorescentia 1–3-flora; stylus functionalis 7.5–8.5 mm longus, glaber; calyx aculeis 40–65 validissimis et lobi attenuati praeditus. **Typus:** Queensland. Burke District: 4.5 miles [7 km] southwest of Mount Isa, 5 July 1974, *P. Ollerenshaw* 1220 & *D. Kratzing* (holo: BRI; iso: AD, *n.v.*, CANB).

Solanum ellipticum var. *horridum* Domin, Biblioth. Bot. 89: 588 (1929). **Type:** Queensland. Burke District: around Cloncurry, February 1910, *K. Domin* (holo: PR, photo at BRI).

Erect, rhizomatous perennial shrub, 0.3–0.6 m high. Juvenile stage unknown. Adult branchlets rusty or brown; prickles 180–400 per decimetre, straight, acicular, 1.5–6 mm long, 11–18 times longer than wide; stellae very dense, 0.6–0.9 mm diameter, stalks 0–0.4 mm long; lateral rays 7 or 8, porrect or ascending; central ray 0.6–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 3.5–9 cm long, 1.2–3.4 cm wide, 1.9–2.7 times longer than broad, apex acute, base cuneate, oblique part 0–5 mm long, obliqueness index 0–9 percent; petioles 0.7–1.7 cm long, 19–30% length of lamina, prickles present. *Upper leaf surface* grey; prickles 0–6, straight, acicular, 1–4 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense, 0.1–0.25 mm apart, 0.6–1 mm across, stalks 0–0.25 mm long; lateral rays 7 or 8, porrect; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* rusty; prickles 0–10, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae dense to very dense, 0.1–0.2 mm apart, 0.7–1 mm diameter, stalks 0–0.6 mm long; lateral rays 7 or 8, porrect; central ray 0.6–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 0–2 mm long, rachis prickles present; 1–3-flowered, flowers 5-merous; pedicels 5–11 mm long at anthesis, same thickness throughout, 0.9–1.2 mm thick at mid-point, prickles absent or present. Calyx tube 2–3.5 mm long, lobes attenuate, 4–9 mm long; prickles present at anthesis, 40–65 per flower, 1–4 mm long; stellae very dense, brown or rusty, 0.4–0.6 mm across, stalks 0–0.2 mm long, lateral rays 6–8, central ray 0.6–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–11 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 4–4.5 mm long; ovary glabrous; functional style 7.5–8.5 mm long, erect, glabrous. *Fruiting calyx* with lobes more than half length of mature fruit, prickles 2–5 mm long. Mature fruits 1 or 2 per inflorescence, globular, 12–14 mm diameter, green; mesocarp moist but not juicy; pedicels 6–14 mm long in fruit, 1.2–1.5 mm thick at mid-point. **Fig. 31.**

***Specimens examined*: Queensland.** Burke District: Mt Isa, Apr 1935, *Blake* 8780 (BRI); 3 km from kiosk road, near Lake Moondarra, NW of Mt Isa, Aug 1973, *Swan* 110 (BRI); 60 km E of Mount Isa on the Mount Isa–Cloncurry road, Aug 1973, *Swan* 116 (BRI); hill with radio repeater 4141 on

Fig. 31. Holotype of ***Solanum senticosum***.

Barkly Highway 24 km NNW of Mount Isa, May 1974, *Kanis* 1701 (BRI, CANB, K); Mount Isa, May 1952, Morris 143 (BRI); Mount Isa, Oct 1974, *Specht* 75 & *Rogers* (BRI); north end of dam, 4 km SW of Mt Isa, Aug 1986, *Harris* 66 (BRI); Millican Creek, track to Telstra tower, Barkly Hwy, Apr 1997, *Forster* PIF20821 & *Holland* (BRI); SO_2 study site MR6, 8.27 km to Mt Isa copper stack at 339°, Apr 1998, *Fell* DGF5235 & *Barrs* (BRI); 'Riversleigh', Campbells Camp on the Gregory River, Jul 1998, *Symon* 15794 (AD, BRI). Gregory North District: 'Elderslie', Winton, Sep 1934, *Kennedy* 21 (BRI); Duchess, May 1936, *Blake* 11528 (BRI); track to Mistake Hut, Bladensberg N.P., S of Winton, Mar 1998, *Forster* PIF22230 & *Booth* (AD, BRI, MEL). Mitchell District: 'Springdale', N of Aramac, Jul 2000, *Fensham* 3946 (BRI).

***Distribution and habitat*:** *Solanum senticosum* is endemic to Queensland. Most collections are from the Mount Isa area, but it extends to Winton and Aramac (**Map 17**). It is most often recorded from rocky ridges dominated by *Eucalyptus leucophloia* subsp. *euroa* with *Triodia* understorey.

***Phenology*:** Flowers are recorded from March to October; fruits from March to August.

***Notes*:** *S. senticosum* is close to *S. ellipticum*, but differs by the erect shrubby habit; the rusty indumentum on the stems, leaves and calyces; the more densely prickly branchlets; the consistently cuneate leaf bases; the larger stellae on the upper leaf surface; and the calyx with many stout prickles in longitudinal rows.

The Symon collection from Riversleigh is atypical as it lacks the rusty colouration of the stems and leaves.

***Conservation status*:** Widespread. Not considered at risk.

***Etymology*:** from the Latin *senticosus* - full of thorns or prickles.

49. Solanum quadriloculatum F.Muell., Fragm. 2: 161 (1861). **Type:** [Queensland. Burke District:] Gulf of Carpentaria, Nicholson River, 21–24 August 1856, *F. Mueller* (lecto: MEL [MEL11735]), *fide* Symon (1981).

***Illustration*:** Symon (1981: 211).

Sprawling, herbaceous resprouter or rhizomatous perennial shrub, 0.1–0.3 m high. Juvenile stage unknown. Adult branchlets ridged, yellow or rusty; prickles 240–700 per decimetre, straight, acicular, 2–8 mm long, 11–20 times longer than wide; stellae very dense, 0.5–1 mm diameter, stalks 0–0.8 mm long; lateral rays 7 or 8, ascending; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 5.5–14.5 cm long, 2.5–7 cm wide, 1.7–2.3 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–6 mm long, obliqueness index 0–5 percent; petioles 0.8–4.4 cm long, 15–60% length of lamina, prickles present. *Upper leaf surface* grey; prickles 1–10, straight, acicular, 2–5 mm long, prickles present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense to very dense, 0.05–0.2 mm apart, 0.6–1.2 mm across, stalks 0–1 mm long; lateral rays 7 or 8, porrect or ascending; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 3–20, straight, acicular, present on midvein only or present on midvein and lateral veins; stellae very dense, 0.05–0.1 mm apart, 0.7–1.2 mm diameter, stalks 0–1.6 mm long; lateral rays 7 or 8, porrect or ascending; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 23–60 mm long, rachis prickles absent; 9–15-flowered, with all flowers bisexual and 5-merous; pedicels 4–11 mm long at anthesis, same thickness throughout, 1–1.2 mm thick at mid-point, prickles absent. Calyx tube 2–4 mm long, lobes deltate or attenuate, 1.5–4.5 mm long; prickles present at anthesis, 5–40 per flower, 1–3 mm long; stellae very dense, yellow or white, 0.5–0.9 mm across, stalks 0–1.2 mm long, lateral rays 7 or 8, central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 9–15 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 5.5–6.5 mm long; ovary glabrous; functional style 9–10.5 mm long, erect, glabrous. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles 1–3 mm long. Mature fruits 1–6 per inflorescence, globular, 14–17 mm diameter, yellowish-green, 4-locular; pedicels 11–17 mm long in fruit, 1.1–1.9 mm thick at mid-point; seeds pale yellow, 2.3–2.9 mm long.

***Specimens examined*: Queensland.** BURKE DISTRICT: Cloncurry, Nov 1935, *Blake* 10109 (BRI); 'Barkly Downs', *c.* 50 miles [80 km] SE of Camooweal, Dec 1947, *Everist* 3381 (BRI); Dugald River, Apr 1962, *Cole* 128 & *Provan* (BRI); c. 24 km W of Cloncurry, on road to Mt Isa, Apr 1973, *Henderson* H1854 (BRI); 5 km SW of Mt Isa, Apr 1976, *Farrell* TF369 (BRI); 105 km N of Cloncurry, Apr 1993, *Milson* JM357 (BRI); 85 km from Cloncurry on the Normanton highway near 'Coolulla' station, Jul 1993, *Alcock* 11283 (AD, BRI); Riversleigh road, 22 km ESE of 'Riversleigh' HS towards Burketown–Camooweal road, Aug 1993, *Lally* 99 (BRI, CANB); 34 km NW of McKinlay, Apr 1996, *Milson* JM1011 (BRI); 15 km from Mt Isa on Duchess road, May 1997, *Forster* PIF21180 & *Booth* (BRI, DNA); Camooweal Caves N.P., Aug 1999, *Fox* IDF707 & *Middleton* (BRI); between Cloncurry and Mt Isa on Barkly Highway, Apr 2001, *McDonald* KRM826 (AD, BRI). GREGORY NORTH DISTRICT: Georgina River, May 1933, *Whitehouse* (BRI); between Glenormiston and Toko Range, Feb 1935, *Boyle s.n.* (BRI); Duchess–Mt Isa road, May 1963, *Gittins* 735 (BRI); QT Bore, 29 km SE of 'Kollala', May 1985, *Neldner* 1963 & *Stanley* (BRI); 3 km N of 'Bushy Park' HS, 21 km NW of Duchess, May 1985, *Neldner* 2113 & *Stanley* (BRI); Trough Tank, Placer Pacific Osborne exploration lease, 30 km N of Pathungra, May 1993, *Gunness* AG2188 (BRI).

***Distribution and habitat*:** In Queensland, *Solanum quadriloculatum* is confined to the north-west, from Lawn Hill N.P. to Duchess, and east to Cloncurry (**Map 19**). It also occurs in Northern Territory and the Kimberley of Western Australia. It inhabits low open eucalypt woodland on gravelly hills and flats.

***Phenology*:** Flowers and fruits are recorded from April to December.

***Notes*:** *S. quadriloculatum* is closely related to *S. ellipticum*, but differs by the conspicuously ridged branchlets, the presence of long-stalked stellae (stalks > 0.4 mm long and up to 1.6 mm long) on all plant parts, the mostly larger stellae on the upper and lower leaf surfaces, the 9–15 flowered inflorescences (1–9 flowered for *S. ellipticum*), the flimsy (non-rigid) prickles on the calyx, and the absence of prickles on the rachis of the inflorescence.

Solanum quadriloculatum is consistently 4-locular, but some forms of *S. ellipticum* may also be 4-locular.

The type of *S. quadriloculatum* was collected from the Nicholson River at about 18° latitude. All subsequent collections of *S. quadriloculatum* have been made further south (19–22.5° latitude). The type (which is rather scrappy) does not match the subsequent collections terribly well. It has broad based prickles, < 10 times longer than wide, the stellae of the upper leaf surface are relatively widely spaced (moderate to dense) and the stellae stalks are very short. Collections from the type locality are sorely needed to determine if the name has been correctly applied. The full description given above is based on the modern collections.

***Conservation status*:** Widespread. Not considered at risk.

50. Solanum crassitomentosum Domin, Biblioth. Bot. 89: 584 (1929). **Type:** Queensland. NORTH KENNEDY DISTRICT: Dividing range west of Pentland, February 1910, *K. Domin* (holo: PR).

Erect, rhizomatous perennial shrub, 0.3–1 m high. Juvenile stage unknown. Adult stems bark furrowed, corky. Adult branchlets terete or ridged, yellow or rusty or brown; prickles 30–160 per decimetre, straight, acicular, 1–5 mm long, 10–16 times longer than wide; stellae very dense, 0.25–0.7 mm diameter, stalks 0–0.7 mm long; lateral rays 6–9, ascending; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, entire; lamina 3.5–7.5 cm long, 1.5–3.5 cm wide, 1.7–2.3 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–3 mm long, obliqueness index 0–6 percent; petioles 0.8–2.6 cm long, 16–35% length of lamina, prickles absent or present. *Upper leaf surface* grey; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae very dense, *c.* 0.05 mm apart, 0.5–0.7 mm across, stalks 0–0.7 mm long; lateral rays 6–8, porrect; central ray 1.2–2.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae dense to very dense, 0.05–0.1 mm apart, 0.4–0.8 mm diameter, stalks 0–1 mm long; lateral rays 7 or 8, porrect; central ray 1.5–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, solitary or pseudo-racemose, common peduncle 5–14 mm long, rachis prickles absent; 1 or 2-flowered, strongly or weakly andromonoecious, flowers 5-merous; pedicels 4–11 mm long at anthesis, same

thickness throughout or markedly thicker distally, 1.1–1.5 mm thick at mid-point, prickles absent. Calyx tube 3.5–5 mm long, lobes deltate, 4–7 mm long; prickles absent at anthesis; stellae very dense, transparent or brown or rusty, 0.5–0.7 mm across, stalks 0.3–0.9 mm long, lateral rays 7 or 8, central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white, mauve or purple, 12–17 mm long, shallowly or deeply lobed, inner surface densely stellate-hairy; anthers 5.5–7.5 mm long; ovary glabrous, or with Type 2 hairs only; functional style 10.5–12.5 mm long, erect, glabrous. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 14–18 mm diameter, yellowish-green or green, 4-locular; placenta in cross-section stalked, circular to elliptical; mesocarp moist but not juicy; exocarp 2.4–3 mm thick; pedicels 7–13 mm long in fruit, 1.3–1.5 mm thick at mid-point; seeds brown to black, 2.5–2.8 mm long.

***Specimens examined*: Queensland.** Burke District: 'Warang' area, White Mountains N.P., Apr 2000, *McDonald* KRM385 (BRI); NW of 'Warang', White Mountains N.P., Apr 2000, *McDonald* KRM467 (BRI); 20 km W of 'Warang' HS site, White Mountains N.P., 57 km by road N of Torrens Creek, Apr 2000, *Thomas* 1835 & *Thompson* (BRI, NSW); 3 km NW of 'Warang' HS site, White Mountains N.P., Apr 2000, *Thomas* 1840 & *Thompson* (BRI, NSW). North Kennedy District: W of Pentland, between Warrigal and Burra, Oct 1935, *Blake* 9921 (BRI); Burra Range, W of Pentland, Jul 1985, *Williams* 85048 (BRI); White Mountains N.P., east of 'Warang', Mar 2000, *Wannan* 1629 & *Martindale* (BRI, MEL). Mitchell District: Poison Valley road, White Mountains N.P., Apr 2000, *McDonald* KRM426 (BRI); 7 km E of 'Warang' HS on track to Sandstone Wall, Apr 2000, *Thomas* 1452 & *Thompson* (BRI, NSW).

***Distribution and habitat*:** *Solanum crassitomentosum* is endemic to Queensland. Confined to the White Mountains–Burra Range area, W of Townsville (**Map 19**). It grows in eucalypt woodland on sandstone. The dominant tree species include *Eucalyptus exilipes, E. lamprophylla, E. leichhardtii, Acacia shirleyi* or *Lysicarpus angustifolius. Triodia* is often present in the ground layer.

***Phenology*:** Flowers are recorded for March, April, July and October; mature fruits recorded for April.

***Notes*:** *S. crassitomentosum* is related to *S. quadriloculatum*, but differs by the 1 or 2 flowered inflorescence (9–15 flowered for *S. quadriloculatum*), calyx and leaf laminae without prickles (leaves and calyx prickly for *S. quadriloculatum*), inner surface of corolla densely stellate hairy (*vs.* glabrous for *S. quadriloculatum*), central ray of stellae on lower leaf surface 1.5–2 times lateral rays (*vs.* 0.8–1.2 times for *S. quadriloculatum*) and the brown to black seeds (*vs.* pale yellow for *S. quadriloculatum*).

***Conservation status*:** *S. crassitomentosum* is currently known from 4 locations, all within the White Mountains National Park. There are no substantial threats to the species, and it is not considered to be at risk.

51. Solanum angustum Domin, Biblioth. Bot. 80: 588–589 (1929). **Type:** Queensland. Cook District: Walsh River, north of Chillagoe, February 1910, *K. Domin* (holo: PR).

Sprawling, herbaceous resprouter, *c.* 0.3 m high. Juvenile stage absent. Adult branchlets grey or yellow; prickles 5–30 per decimetre, straight, acicular, 3–6 mm long, 10–15 times longer than wide; stellae very dense, 0.3–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray present, 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* narrow lanceolate to ovate or elliptical, entire or shallowly lobed throughout; lobes 2 or 3 on each side, obtuse, lobing index 1–1.3; lamina 1.5–4 cm long, 0.4–1.4 cm wide, 3–7.5 times longer than broad, apex obtuse, base cuneate, oblique part 0–1 mm long, obliqueness index 0–3 percent; petioles 0.3–2.2 cm long, 17–55% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–3, straight, acicular, 3–6 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae absent; ordinary stellae sparse to moderate density, 0.3–0.9 mm apart, 0.25–0.4 mm across, sessile; lateral rays 6–8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green or yellowish; prickles absent; stellae sparse to dense, 0.1–0.7 mm apart, 0.3–0.6 mm diameter, stalks 0–0.1 mm long;

lateral rays 7 or 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, solitary or pseudo-racemose, common peduncle 0–15 mm long, rachis prickles present; 1–4-flowered, flowers 5-merous; pedicels *c.* 7 mm long at anthesis, same thickness throughout, *c.* 0.8 mm thick at mid-point, prickles present. Calyx tube 2.5–3 mm long, lobes deltate, 2–2.5 mm long; prickles present at anthesis, 2–10 per flower, 1–4 mm long; stellae dense, transparent, 0.3–0.4 mm across, sessile, lateral rays 7 or 8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla *c.* 10 mm long. *Fruiting calyx* with lobes more than half length of mature fruit, prickles 1–4 mm long. Mature fruits 1 per inflorescence, globular, 16–20 mm diameter, green; pedicels 15–20 mm long in fruit, 0.9–1.2 mm thick at mid-point; seeds pale yellow, 2.5–3 mm long.

***Specimens examined*: Queensland.** Cook District: Stannary Hills, 1908, *Bancroft* 173 (BRI); Alma-den, Nov 1939, *Thurston* 575 (QRS); 26 km W of Einasleigh on road to Forsayth, on top of Newcastle Range, Apr 1992, *Halford* Q958 (AD, BRI, MEL).

***Distribution and habitat*:** *Solanum angustum* is endemic to Queensland and known only from the type and two other collections (cited above) (**Map 20**). The label of the only recent collection indicated that the species was growing in "low eucalypt woodland with shallow clay soil".

***Phenology*:** Very poorly known. Fruits have been collected in April.

***Notes*:** The affinities of this species are not known with any certainty, and it is only tentatively placed in the *S. ellipticum* group.

***Conservation status*:** *S. angustum* has been collected just four times, in 1908, 1910, 1939 and 1992. A recent visit to the 1992 collection site failed to find the species. It has not been seen since 1992, despite deliberate searches during the summer months, especially in the Chillagoe–Walsh River area. Although there are no known extant populations, a presumption of extinction is premature. There would appear to be much available habitat within the extent of occurrence, although the required habitat for the species is still not known.

Applying the IUCN guidelines (IUCN. 2001), and using the 1992 location as an *existing* location, a category of "Endangered" is recommended (EN C2a(ii); D).

52. Solanum argopetalum A.R.Bean **sp. nov.** Frutex prostratus vel fusus; folia late ovata, non profunde lobata, basi cordata et petiolis 12–35 mm longis; pili stellati aliqui apicibus glandularibus in ramulis foliisque praesentes; aculei in ramulis sparse distributi, 1–5 mm longi, calyci absentes; corolla albida, 7–9 mm longa; fructus maturi virides usque flavi. **Typus:** Queensland. Maranoa District: near 'Boxleigh', *c.* 60 km NE of St George, 24 April 2001, *A.R. Bean* 17644 & *L. Pedley* (holo: BRI; iso: AD, CANB, K, MEL, MO, NSW, PRE, *distribuendi*).

Prostrate or sprawling, herbaceous resprouter, 0.1–0.4 m high. Juvenile branchlets with 50–100 prickles per dm, 2–5 mm long; leaves (in outline) broadly ovate, shallowly-lobed, with 2–4 pairs of lobes; lamina *c.* 5 × 4.5 cm, with 20–40 prickles on upper surface. Adult branchlets yellow, rusty or brown; prickles 5–25 per decimetre, straight, acicular, 1–5 mm long, 10–17 times longer than wide; stellae dense, 0.4–0.7 mm diameter, stalks 0–0.25 mm long; lateral rays 6–11, porrect or ascending; central ray present, 1.5–3 times as long as laterals, not gland-tipped or gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* broadly ovate or orbicular, entire or shallowly lobed throughout; lobes 2 or 3 on each side, obtuse, lobing index 1–1.2; lamina 3.5–8.5 cm long, 2–5.5 cm wide, 1.2–1.7 times longer than broad, apex obtuse, base cordate, oblique part 0–3.5 mm long, obliqueness index 0–5 percent; petioles 1.2–3.5 cm long, 30–65% length of lamina, prickles absent. *Upper leaf surface* grey-green; prickles 0–2, straight, acicular, 1–3 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae present; ordinary stellae density moderate, 0.4–0.6 mm apart, 0.6–0.9 mm across, stalks 0–0.3 mm long; lateral rays 7–10, porrect or ascending; central ray 1–3 times as long as laterals, not gland-tipped or gland-tipped; finger hairs

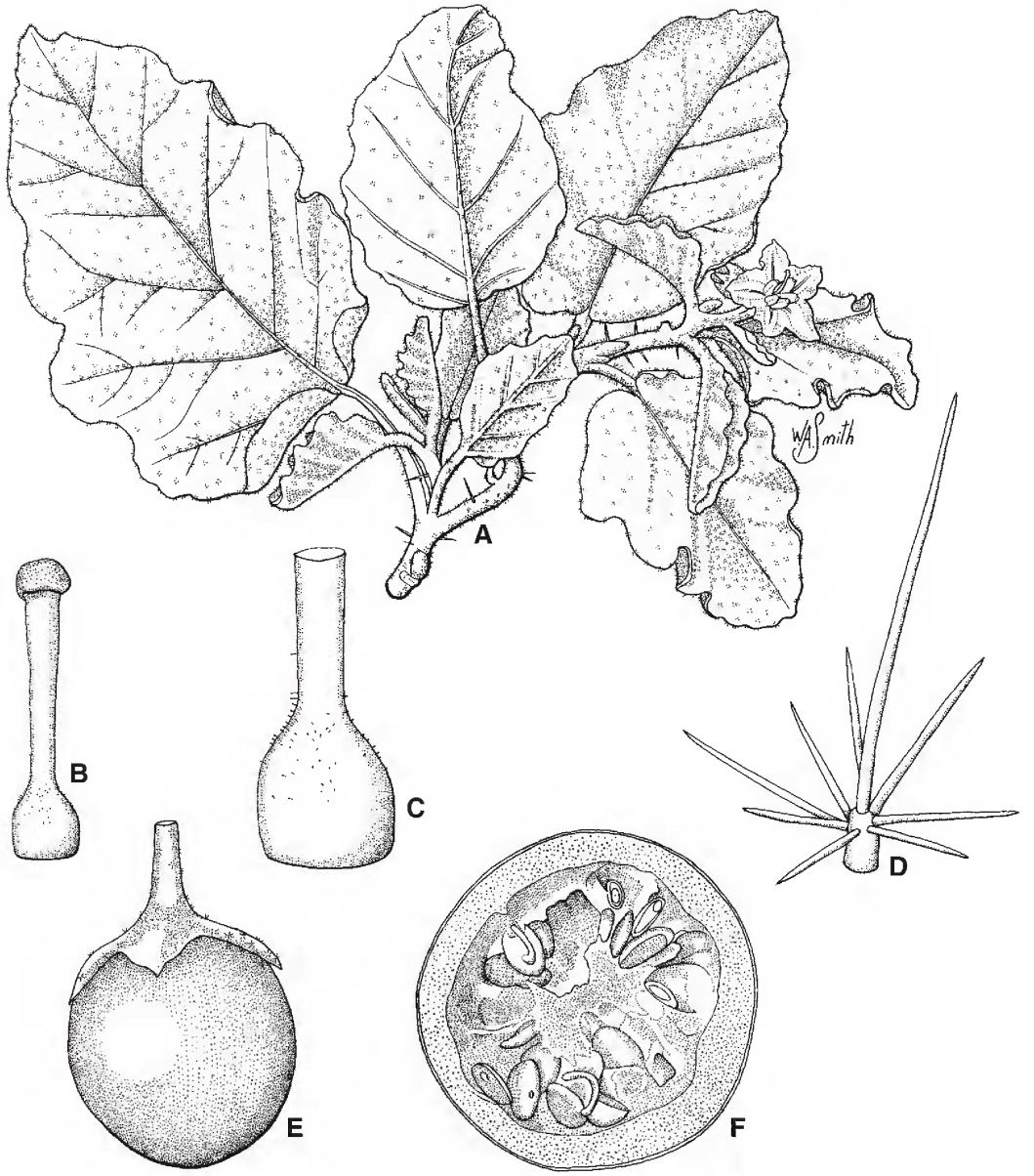

Fig. 32. ***Solanum argopetalum***. A. flowering branchlet × 1. B. ovary and style × 6. C. ovary with Type 2 hairs × 12. D. stellate hair, upper leaf surface × 50. E. mature fruit and calyx × 2. F. transverse section of fruit × 3. A–D, *Bean* 17644 & Pedley; E–F, *Bean* 17768.

absent or present, 0.3–0.6 mm apart, gland-tipped, 0.1–0.3 mm long; Type 2 hairs absent. *Lower leaf surface* green, or greenish-white; prickles absent; stellae dense, 0.1–0.2 mm apart, 0.5–0.6 mm diameter, stalks 0–0.1 mm long; lateral rays 8–11, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped or gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed or supra-axillary, solitary or pseudo-racemose, common peduncle 0–2 mm long, rachis prickles absent or present; 1–4-flowered, weakly andromonoecious or with all flowers bisexual, flowers 4 or 5-merous; pedicels 3–10 mm long at anthesis, same thickness throughout, 0.5–0.6 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes deltate, rostrate or attenuate, 2–7 mm long; prickles absent at anthesis; stellae dense, transparent, 0.4–0.7 mm across, stalks 0–0.2 mm long, lateral rays 6–10, central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white, 7–9 mm long, deeply lobed, inner surface glabrous; anthers 3–4 mm long; ovary with Type 2 hairs only; functional style 4.5–6 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, globular, *c.* 15 mm diameter, yellowish-green or green, 1-locular (septum absent or incomplete); placenta in cross-section sessile, elliptical; mesocarp moist but not juicy; exocarp 1–1.5 mm thick; pedicels 8–20 mm long in fruit, 1–1.2 mm thick at mid-point; seeds pale yellow, 2.7–3.1 mm long. **Fig. 32.**

***Specimens examined*: Queensland.** Maranoa District: 8 km E of Mungallala, Mar 1960, *Johnson* 1483 (BRI); near 'Boxleigh', *c.* 60 km NE of St George, Apr 2001, *Bean* 17643 & *Pedley* (BRI); 1.1 km W of 'Eulorel', W of Surat, Aug 2001, *Bean* 17747 (BRI, MEL); 'Boxleigh', S of Surat, Aug 2001, *Bean* 17761 (BRI); SW of 'Boxleigh', S of Surat, Aug 2001, *Bean* 17768 (BRI); 'Glen Fosslyn', SW of Glenmorgan, Jan 2002, *Bean* 18368 (BRI); 54 km from Mitchell towards Bollon, Jan 2002, *Bean* 18406 (BRI).

***Distribution and habitat*:** *Solanum argopetalum* is endemic to Queensland. Confined to a limited area of southern Queensland, recorded from Mungallala to the Thomby Range south-east of Surat (**Map 20**). It grows on disturbed sites on low hills and ridges in shallow red sandy to loamy soil, often in association with *Acacia catenulata* (Bendee), *Eucalyptus melanophloia* and *Phebalium glandulosum*.

***Phenology*:** Flowers have been recorded in April and August; mature fruits recorded in August.

***Notes*:** This species is quite distinctive. It does seem fairly close to *S. crassitomentosum* because of its short prickles, unarmed calyx and relatively small flowers, but *S. argopetalum* is easily distinguished by its often gland-tipped stellate hairs with 8–11 lateral rays, the lobed leaves, the long petioles (30–65% of lamina length) and the white corolla.

The populations of *S. argopetalum* so far recorded have all been on disturbed sites. At the type locality, plants were quite common on a strip of roadside land that had been cleared in preparation for the erection of a fence. The species could not be found on the opposite (relatively undisturbed) side of the road, even though the vegetation type was identical.

***Conservation status*:** *S. argopetalum* is currently known from 4 locations, none of which is within a conservation reserve. It is threatened by land clearance and weeds (especially *Cenchrus ciliaris*). Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU B2ab(iii,v); C1+2a(i)).

***Etymology*:** From the Greek *argos-* white and *petalos-* petals, in reference to the white corolla. Consistently white flowers are found in only a few native Queensland species.

Group 27A (S. hamulosum group), here defined; related to Group 27B (*S. macoorai* group).

Style and ovary bearing abundant stellate hairs (100%); scrambling or vine-like habit (100%); leaves consistently geminate (100%); branchlets with broad recurved prickles (100%); calyx prickles absent (100%); lower leaf surface white or yellowish (100%); inflorescences supra-axillary (100%); inner surface of corolla sparsely to densely stellate-hairy (100%); juvenile leaves (and sometimes adult leaves) with shallow lobes and very numerous prickles (100%); flower buds ovoid (100%).

c. 6 species from Malesia to Australia; 3 species endemic to Australia, all in Queensland.

Symon (1981) included *S. dimorphispinum* and *S. hamulosum* with *S.* sect. *Micracantha* Dunal, a group of species from tropical America. Whalen (1984) pointed out several morphological differences from *S.* sect. *Micracantha*, that precludes any close affinity. Symon (1981) further hypothesised that *S. dimorphispinum* and *S. hamulosum* were both naturalised from an unknown American source. This is untenable, given the close relationship between these species and others from the same part of Queensland, particularly *S. macoorai*, and the presence of related species in Malesia. The Malesian species probably belonging to the *S. hamulosum* group are *S. heteracanthum* Merr. & L.M.Perry and *S. scheferi* F.Muell. from New Guinea, and *S. lianoides* Elmer from Philippines.

53. Solanum dimorphispinum C.T.White, Proc. Roy. Soc. Queensland 50: 82 (1939). **Type:** Queensland. Cook District: Mt Spurgeon, September 1936, *C.T. White* 10619 (holo: BRI).

***Illustration*:** Symon (1981: 253)

Erect, rhizomatous perennial shrub or vine, 2–5 m high. Juvenile branchlets with *c.* 20 prickles per dm, 2–3 mm long; leaves (in outline) ovate, shallowly-lobed, with 6–7 pairs of lobes; lamina *c.* 22 × 15 cm, with *c.* 90 prickles on upper surface. Adult branchlets yellow or brown; prickles 15–30 per decimetre, curved, broad-based, 2–6 mm long, 2–5 times longer than wide; stellae sparse to dense, 0.15–0.25 mm diameter, sessile; lateral rays 6–8, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire or shallowly lobed throughout; lobes 2–6 on each side, obtuse, lobing index 1–1.3; lamina 10–14.5 cm long, 4.5–7 cm wide, 1.9–2.5 times longer than broad, apex acute or acuminate, base cuneate, oblique part 3–7 mm long, obliqueness index 2–6 percent; petioles 1.3–2.4 cm long, 13–18% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 0–15, straight, broad-based, 5–7 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse, 0.7–4.5 mm apart, 0.25–0.35 mm across, sessile; lateral rays 7–9, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–4, straight, acicular or broad-based, prickles absent or present on midvein only or present on midvein and lateral veins; stellae very dense, *c.* 0.05 mm apart, 0.25–0.35 mm diameter, sessile; lateral rays 7–10, porrect, central ray absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–10 mm long, rachis prickles absent; 5–17-flowered, weakly andromonoecious, flowers 5-merous; pedicels 12–23 mm long at anthesis, same thickness throughout, 0.6–0.9 mm thick at mid-point, prickles absent. Calyx tube 1–3 mm long, lobes deltate, 3–5 mm long; prickles absent at anthesis; stellae very dense, transparent or purple, 0.2–0.3 mm across, sessile, lateral rays 8–10, central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 8–14 mm long, deeply lobed, inner surface sparsely to densely stellate-hairy; anthers 5–6.5 mm long; ovary with stellate hairs only; functional style 7–8.5 mm long, erect, with stellate hairs only, stellae 0.2–0.4 mm across, lateral rays 11–15, central ray 0.5–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, oblate or globular, 30–35 mm diameter, yellow, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 3.8–4.2 mm thick; pedicels 29–39 mm long in fruit, 0.9–1.8 mm thick at mid-point; seeds pale yellow, 2.3–2.8 mm long.

***Specimens examined*: Queensland.** Cook District: McDowall Range between Mossman and Bloomfield River, May 1969, *Webb & Tracey* 8302 (BRI, CANB); Mt Lewis, Oct 1969, *Webb & Tracey* 8352 (BRI, CANB); T.R.140, Cow L.A., Sep 1973, *Hyland* 6874 (QRS); S.F.143, South Mary L.A., Feb 1974, *Hyland* 7205 (BRI, QRS); 23 miles [37 km] N of Mt Molloy on road to Mossman, Aug 1974, *Swan* 138 (BRI); T.R.66, Oct 1977, *Moriarty* 2278 (BRI); S.F. 143, Kanawarra, Carbine L.A., Oct 1991, *Gray* 5336 (BRI, QRS); Black Mountain, 16°38'S 145°29'E, Jul 1999, *Jago* 5314 *et al.* (BRI); 29.5 km along Mt Lewis road, Mt Lewis Forest Reserve, Nov 2001, *McDonald* KRM1013 (BRI, HO).

***Distribution and habitat*:** *Solanum dimorphispinum* is endemic to Queensland. It is known only from the Mt Lewis and Mt Spurgeon areas (**Map 2**). It inhabits notophyll rainforest at altitudes above 900 metres.

***Phenology*:** Flowers are recorded between May and November; mature fruits in November and December.

***Notes*:** *S. dimorphispinum* is one of the few species for which all stellae lack a central ray. The mature fruits are pale yellow and globose, 30–35 mm diameter. Smaller immature fruits (seen in spirit collection) are quite ellipsoidal in shape.

***Conservation status*:** Currently listed as "Rare" under the Queensland Nature Conservation Act, 1992. The extent of occurrence is small, but the species is not considered at risk.

54. Solanum hamulosum C.T.White, Contr. Arnold Arbor. 4: 95 (1933). **Type:** Queensland. Cook District: Boonjie, Atherton Tableland, 23 September 1929, *S.F. Kajewski* 1222 (holo: BRI).

***Illustration*:** Symon (1981: 254)

Erect, perennial vine, 1.5–7 m high. Juvenile branchlets with 30–40 prickles per dm, 2–3 mm long; leaves (in outline) broadly ovate, shallowly-lobed, with 4–6 pairs of lobes; lamina 18–22 cm long, 9–13 cm wide, with 50–100 prickles on upper surface. Adult branchlets grey to rusty or brown; prickles 50–140 per decimetre, curved, broad-based, 1–3.5 mm long, 1–2.5 times longer than wide; stellae very dense, 0.3–0.4 mm diameter, stalks 0–0.4 mm long; lateral rays 7–10, porrect or ascending; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 11–15 cm long, 5–6.5 cm wide, 1.7–2.4 times longer than broad, apex acute or acuminate, base cuneate, obtuse or cordate, oblique part 0–6 mm long, obliqueness index 0–6 percent; petioles 1.9–3.8 cm long, 17–25% length of lamina, prickles present. *Upper leaf surface* green or grey-green; prickles 0–10, straight, broad-based, 2.5–7 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae sparse to dense, 0.2–0.3 mm apart, 0.25–0.4 mm across, sessile; lateral rays 6–8, porrect; central ray 0.7–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 1–6, curved, broad-based, prickles present on midvein only; stellae dense, 0.1–0.15 mm apart, 0.4–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 8–9, porrect; central ray 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–5 mm long, rachis prickles absent or present; 5–11-flowered, weakly andromonoecious, flowers 5-merous; pedicels 8–18 mm long at anthesis, markedly thicker distally, 0.5–0.6 mm thick at mid-point, prickles absent. Calyx tube 2–3.5 mm long, lobes deltate, 2–3.5 mm long; prickles absent at anthesis; stellae dense to very dense, white, brown or rusty, 0.25–0.5 mm across, stalks 0–0.2 mm long, lateral rays 7 or 8, central ray 0.7–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve, 9–15 mm long, shallowly or deeply lobed, inner surface sparsely stellate-hairy; anthers 4.5–6 mm long; ovary with stellate hairs only; functional style 8–8.5 mm long, erect, with stellate hairs only, stellae 0.3–0.5 mm across, lateral rays 6–8, central ray 0.7–1.2 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 13–15 mm diameter, yellowish-green or green, 2-locular; placenta in cross-section sessile, semi-circular, or stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.8–1 mm thick; pedicels 18–25 mm long in fruit, 0.8–1.2 mm thick at mid-point; seeds pale yellow, 2–2.5 mm long. *Dirran Curse.*

***Specimens examined*: Queensland.** Cook District: Tarzali, the Dirran and Russell River road, Feb 1918, *White s.n.* (BRI); Millaa Millaa, Sep 1937, *Henry s.n.* (QRS); R310, Boonjie, Aug 1961, *Hyland* AFO 2041 (QRS); near Boonjie, May 1967, *Symon* 4750 (BRI); Davies Creek S.F., Aug 1973, *Moriarty* 1371 (BRI, CANB); western foothills of Mt Bartle Frere, Aug 1973, *Moriarty* 1434 (BRI, CANB); S.F.755, T.R.1230, Boonjie L.A., Dec 1974, *Irvine* 1094 (BRI, QRS); Herberton Range, McKell Road turnoff, Aug 2003, *McDonald* KRM1165 (BRI). North Kennedy District: Ravenshoe, Sep 1937, *Brass & White* 132 (BRI); Keogh's block, 'Bellview', Evelyn, Jan 1974, *Collins* C74-12 (BRI);

S.F.194, Parish of Herberton, Dec 1991, *Hyland* 14421 (BRI, QRS).

***Distribution and habitat*:** *Solanum hamulosum* is endemic to Queensland, and known only from the Atherton Tableland (**Map 21**). It grows in notophyll rainforest on basaltic soils, between 600–1100 metres altitude.

***Phenology*:** Flowers are recorded between August and December; mature fruits in November and December.

***Notes*:** *S. hamulosum* and *S. dimorphispinum* are very similar in habit, habitat, leaf size and prickle shape. They can readily be distinguished on characters of the stellate hairs, but it was not known whether these differences correlated to differences on other organs of the plant. During this study I was able to procure mature fruits of both species; those of *S. dimorphispinum* are 30–35 mm in diameter, while those of *S. hamulosum* are only 13–15 mm diameter. This correlation is seen as a vindication for using stellate hair morphology in diagnosing and separating *Solanum* taxa where there is incomplete data about the flowering or fruiting characters. The hairs are always available for study, and are unaffected by drying or preserving. Many other useful characters are rarely available or visible only on fresh material, or difficult to determine from dried specimens.

***Conservation status*:** Currently listed as "Rare" under the Queensland Nature Conservation Act, 1992.

Solanum hamulosum was considered a weed of secondary regrowth during the 1930's and 1940's, when the rainforests of the Atherton Tableland were being cleared, and was called 'Dirran Curse'. Now, little of the original habitat remains, and the species is exceedingly difficult to locate. The rainforest edges (the most likely habitat) are usually swathed in *Lantana camara*. Applying the IUCN guidelines (IUCN. 2001), a category of "Endangered" is recommended (EN B1ab(iii,iv,v)+2ab(iii,iv,v); C1).

55. Solanum eminens A.R.Bean **sp. nov.** Vitis perennis vel frutex scandens; folia adulta viridia, late ovata, non profunde lobata, aculeis utrinque rectis numerosis; ramuli moderate aculeati (70–90 per dm.), aculei curvi, ad basim lati; inflorescentia pseudo-racemosa, 7–10-flora; ovarium tantum pilis stellatis praeditum; calycis aculei absentes; fructus maturi aurantiaci, pedicellis 23–28 mm longis. **Typus:** Queensland. Cook District: Bellenden Ker Range, 11 October 1974, *B. Hyland* 7772 (holo: BRI; iso: QRS).

Sprawling perennial vine, 1–2 m high. Juvenile stage unknown. Adult branchlets brown; prickles 70–90 per decimetre, curved, broad-based, 2–4 mm long, 2.5–4 times longer than wide; stellae sparse to dense, 0.2–0.3 mm diameter, stalks 0–0.1 mm long; lateral rays 7 or 8, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* broadly ovate, shallowly lobed throughout; lobes 5–7 on each side, acute, lobing index 1.1–1.3; lamina 8–12 cm long, 5–7.5 cm wide, 1.4–1.8 times longer than broad, apex acute or acuminate, base cuneate, oblique part 0–7 mm long, obliqueness index 0–7 percent; petioles 1.6–3 cm long, 20–30% length of lamina, prickles present. *Upper leaf surface* green; prickles 40–120, straight, acicular, 3–11 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.6–1.4 mm apart, 0.2–0.35 mm across, sessile; lateral rays 7 or 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 15–30, straight, acicular or broad-based, prickles present on midvein and lateral veins; stellae dense to very dense, 0.05–0.2 mm apart, 0.25–0.35 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.3–0.6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 6–12 mm long, rachis prickles absent or present; 7–10-flowered, weakly andromonoecious, flowers 5-merous; pedicels 12–18 mm long at anthesis, same thickness throughout, 0.5–0.6 mm thick at mid-point, prickles absent or present. Calyx tube 2.5–3.5 mm long, lobes deltate or rostrate, 0.5–3 mm long; prickles absent at anthesis; stellae dense, yellow or white or purple, 0.2–0.3 mm across, sessile, lateral rays 7 or 8, central ray 0.4–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla

Fig. 33. ***Solanum eminens***. A. flowering branchlet × 0.8. B. ovary and style × 6. C. ovary with stellate hairs × 20. D. stellate hair, upper leaf surface × 60. A, D, *Powell* 796 *et al.*; B–C, *Clarkson* 6575.

mauve, 9–14 mm long, deeply lobed, inner surface sparsely stellate-hairy; anthers 5.5–6.5 mm long; ovary with stellate hairs only; functional style *c.* 8.5 mm long, erect, with stellate hairs only, stellae *c.* 0.2 mm across, lateral rays 6–8, central ray *c.* 1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, *c.* 17 mm diameter, orange; pedicels 23–28 mm long in fruit, 1–1.3 mm thick at mid-point; seeds pale yellow, 1.9–2.4 mm long. **Fig. 33.**

***Specimens examined*: Queensland.** Cook District: Bellenden Ker, Nov 1972, *Hyland* 6584 (BRI, QRS); Bellenden Ker Range, Oct 1974, *Hyland* 7757 (BRI, CANB, QRS); summit of Bellenden Ker, S of Cairns, Sep 1977, *Powell* 796 *et al.* (BRI, NSW); Mount Bellenden Ker, near the cableway terminus, Sep 1986, *Clarkson* 6575 (AD, BRI, MBA, QRS); central peak of Bellenden Ker, Wooroonooran N.P., Jun 1995, *Hunter* JH5302 (BRI).

Distribution and habitat: *Solanum eminens* is endemic to Queensland. Apparently confined to the highest altitudes (above 1500 metres) on Mt Bellenden Ker (**Map 23**), in wet microphyll

to notophyll fern forest.

***Phenology*:** Flowers are recorded in October; mature fruits in June and November

***Notes*:** Two collectors have independently stated that the mature fruit colour is orange.

Solanum eminens differs significantly from *S. hamulosum* by the adult leaves that have 5–7 pairs of conspicuous acute lobes, and with 40–120 prickles on the upper leaf surface (leaves entire, 0–10 prickles for *S. hamulosum*); the very sparse to sparse indumentum of the upper leaf surface (moderate to dense indumentum for *S. hamulosum*); the stellae of the lower leaf surface 0.25–0.35 mm diameter with central ray 0.3–0.6 times as long as laterals (0.4–0.5 mm diameter and central ray 0.7–1.5 times as long as laterals for *S. hamulosum*) and the orange mature fruit (green for *S. hamulosum*).

***Conservation status*:** *S. eminens* is known only from the highest parts of Mt Bellenden Ker in Wooroonooran N.P. It is threatened by low population size and restricted area of occupancy. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU D1).

***Etymology*:** From the Latin, *eminens* meaning "projecting, high". This is in reference to the altitude at which this species grows (1500–1600 metres), the highest for any Australian *Solanum*.

Group 27B (S. macoorai group) = Group 6 of Whalen (1984)

Calyx not accrescent in fruit (100%); inflorescences andromonoecious, male flowers and bisexual flowers same size and prickliness (100%); branchlet stellae not gland-tipped (100%); branchlet finger hairs absent (100%); mature fruits green to yellowish-green (94%); branchlet prickles acicular (89%); adult leaves entire or shallowly lobed (87%); seeds white to pale yellow (83%); adult leaves entire (78%); calyx without prickles (77%); rhizomatous perennial shrubs (72%); inner surface of corolla stellate-hairy (71%).

24 species endemic to Australia, 18 species indigenous to Queensland and north-eastern N.S.W.

56. Solanum macoorai F.M.Bailey, Queensland Dept. Agric. Bull. 8: 80 (1893). **Type:** Queensland. Cook District: summit of south peak, Mt Bellenden-Ker, June 1889, *F.M. Bailey s.n.* (holo: BRI).

***Illustration*:** Symon (1981: 241)

Erect, rhizomatous perennial shrub, 1–4 m high. Juvenile branchlets with 90–200 prickles per dm, 2–12 mm long; leaves (in outline) ovate, shallowly-lobed, with 7–9 pairs of lobes; lamina *c.* 12 × 5 cm, with 100–150 prickles on upper surface. Adult branchlets yellow, rusty or brown; prickles absent or present, 0–55 per decimetre, straight, acicular, 3–7 mm long, 7–12 times longer than wide; stellae sparse to dense, 0.15–0.25 mm diameter, sessile; lateral rays 6–8, porrect; central ray absent or present, 0–0.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire or shallowly lobed throughout; lobes 3–5 on each side, acute or obtuse, lobing index 1–1.2; lamina 9–16 cm long, 3–7.5 cm wide, 2.1–3.2 times longer than broad, apex acute or acuminate, base cuneate or obtuse, oblique part 0–9 mm long, obliqueness index 0–6 percent; petioles 1.4–2.6 cm long, 10–18% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–80, straight, acicular, 3–8 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse, 0.8–5 mm apart, 0.2–0.3 mm across, sessile; lateral rays 6–8, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 0–16, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae very sparse to moderate, 0.2–0.5 mm apart, 0.2–0.3 mm diameter, sessile; lateral rays 7–10, porrect; central ray 0–0.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 1–7 mm long, rachis prickles absent; 7–30-flowered, weakly andromonoecious, flowers 5-merous; pedicels 6–12 mm long at anthesis, markedly thicker distally, 0.4–0.7 mm thick at mid-point, prickles absent. Calyx tube

2–4 mm long, lobes deltate or rostrate, 1.8–3.5 mm long; prickles absent at anthesis; stellae dense to very dense, yellow, transparent or purple, 0.2–0.25 mm across, sessile, lateral rays 6–9, central ray 0–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 8–10 mm long, deeply lobed, inner surface sparsely stellate-hairy; anthers 4–5.5 mm long; ovary with stellate hairs only, or with stellate and Type 2 hairs; functional style 5–7 mm long, erect, with stellate hairs only or with stellate and Type 2 hairs, stellae 0.25–0.4 mm across, lateral rays 7–9, central ray 0.5–2 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 23–25 mm diameter, red or orange, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 4.7–5 mm thick; pedicels 22–31 mm long in fruit, 1.1–1.8 mm thick at mid-point; seeds pale yellow, 3–3.6 mm long.

***Specimens examined*: Queensland.** Cook District: Johnstone River, Jul 1917, *Michael* (BRI); Boonjie, Atherton Tableland, *anno* 1929, *Kajewski* 1255 (BRI); Lake Barrine, Jul 1938, *Goy* 432 (BRI); near Mt Haig, *c.* 12 miles [19 km] SE of Mareeba, May 1969, *Tracey s.n.* (BRI); Mt Bellenden Ker, *c.* 1 mile [1.6 km] SE of Centre Peak, Jun 1969, *Smith* 14682 (BRI); Pine Creek Forestry road, Malbon Thompson Range, Jul 1973, *Webb & Tracey* 13383 (BRI, QRS); SW slopes of May Peak, ESE of Cairns, Sep 1974, *Moriarty* 1580 (BRI, CANB); S.F.607, West L.A., Dec 1974, *Hyland* 7903 (BRI); Mt Bartle Frere, 1.8 km WSW of Bobbin Bobbin Falls, Nov 1988, *Jessup* GJM1077 *et al.* (BRI); S.F.194 Herberton Range, *c.* 9.5 km S of Rifle Range road turnoff, Aug 1989, *Bostock* 1023 & *Guymer* (BRI); S.F.185 Danbulla, Breach L.A., Dec 1991, *Gray* 5361 (BRI, QRS); Smiths Track, Barron Gorge N.P., Apr 1997, *Jago* 4327 (BRI); S.F.144, Chowchilla L.A., Sep 2000, *Ford* 2428 (BRI); Wooroonooran N.P., East Mulgrave River, Nov 2000, *Forster* PIF26433 *et al.* (A, BRI, MEL). North Kennedy District: Koolmoon Creek, Sep 1959, *Smith* 10809 (BRI); 'Bellview', Evelyn, Jan 1974, Collins C74-5 (BRI); Kirrama Range, S.F.344, *c.* 38 km NW of Kennedy, Nov 1989, *Fell* DF2006 (AD, BRI, MEL); Koombooloomba S.F., near Tully Falls road, S of Ravenshoe, Apr 2002, *Bean* 18717 & *McDonald* (BRI, MEL).

***Distribution and habitat*:** *Solanum macoorai* is endemic to Queensland, extending from Windsor Tableland (near Mount Carbine) to the Kirrama Range near Cardwell (**Map 22**). It occurs in notophyll rainforest or the ecotone between eucalypt forest and rainforest, in high rainfall areas. Altitude is commonly between 500 and 1500 metres, but it extends almost to sea level in some places.

***Phenology*:** Flowers and fruits are recorded for almost every month of the year.

***Notes*:** *S. macoorai* is closely related to *S. magnifolium*, but differs by the juvenile plants with longer and more abundant prickles; adult leaves usually lobed and bearing prickles, and with sparser indumentum on the lower surface; the stellae (on all organs) with a much shorter central ray, and stellae of the lower leaf surface lacking a central ray; and fruits red or orange at maturity (*vs.* yellow).

In the protologue, Bailey described the fruit of *S. macoorai*, but no trace of this (these) fruit(s) can now be found at BRI. The holotype comprises 4 detached leaves mounted on a single sheet. Fortunately the very distinctive indumentum pattern on the leaves of *S. macoorai* means that there is no doubt about the correct application of the name.

***Conservation status*:** Widespread. Not considered at risk.

57. Solanum magnifolium F.Muell., Fragm. 6: 27 (1867); *S. stelligerum* var. *magnifolium* (F.Muell.) Benth., Fl. Austral. 4: 451 (1868). **Type:** Queensland. North Kennedy District: Murray River [N of Cardwell], August 1867, *J. Dallachy s.n.* (holo: MEL [MEL11658]).

Solanum dallachii Benth., Fl. Austral. 4: 456 (1868), **syn. nov. Type:** Queensland. North Kennedy District: Rockingham Bay, *anno* 1864, *J. Dallachy* (lecto: K; isolecto: MEL [MEL11655, MEL11659]), *fide* Symon (1981), but see discussion below.

[*Solanum repandum* auct. non G. Forster: F. Muell., Fragm. 6: 145 (1868)].

***Illustration*:** Symon (1981: 246), as *S. dallachii.*

Erect, rhizomatous perennial shrub, 1.5–4 m high. Juvenile branchlets with 30–50 prickles per dm, 4–5 mm long; leaves (in outline) ovate, shallowly-lobed, with 4 or 5 pairs of lobes; lamina 9.5–11.5 cm long, 4.3–5.5 cm wide, with 20–40 prickles on upper surface. Adult branchlets yellow, rusty or brown; prickles absent or present, 0–25 per decimetre, straight,

acicular or broad-based, 1.5–5.5 mm long, 7–10 times longer than wide; stellae dense, 0.2–0.3 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 3–6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire or shallowly lobed throughout; lobes 4–6 on each side, obtuse, lobing index 1–1.1; lamina 9–18 cm long, 4–8 cm wide, 2.2–2.7 times longer than broad, apex acute or acuminate, base cuneate, oblique part 0–4.5 mm long, obliqueness index 0–3 percent; petioles 1–3.5 cm long, 8–19% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–10, straight, acicular, 1–4 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.25–1 mm apart, 0.2–0.3 mm across, sessile; lateral rays 6–8, porrect; central ray 4–8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* yellowish; prickles absent; stellae moderate to very dense, 0.05–0.3 mm apart, 0.25–0.4 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 1.5–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 2–8 mm long, rachis prickles absent; 6–18-flowered, weakly andromonoecious, flowers 5-merous; pedicels 4–10 mm long at anthesis, same thickness throughout, 0.4–0.7 mm thick at mid-point, prickles absent. Calyx tube 1.5–2.5 mm long, lobes deltate, 3–4 mm long; prickles absent at anthesis; stellae very dense, yellow or brown or rusty, 0.25–0.35 mm across, sessile, lateral rays 7 or 8, central ray 3–6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 6–11 mm long, deeply lobed, inner surface sparsely stellate-hairy; anthers 3.5–4.5 mm long; ovary with stellate hairs only; functional style *c.* 6 mm long, erect, with stellate hairs only, stellae 0.25–0.3 mm across, lateral rays *c.* 8, central ray 1.5–3 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 20–27 mm diameter, yellow or yellowish-green, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 4.5–6 mm thick; pedicels 19–23 mm long in fruit, 1.2–2.5 mm thick at mid-point; seeds pale yellow, 2.7–3.1 mm long.

***Specimens examined*: Queensland.** Cook District: Endeavour River, Sep 1872, *Hann* (BRI); Upper Parrot Creek, Annan River, Sep 1948, *Brass* 20283 (BRI); *c.* 6 miles [10 km] SW of Yungaburra, Curtain Fig site, Dec 1968, *Tracey s.n.* (BRI); between Macnamee Ck and Downey Ck, W of Innisfail, May 1972, *Webb* & *Tracey* 10755 (BRI); Macdowall Range between Daintree River and China Camp, Aug 1972, *Webb* & *Tracey* 10752 (BRI); Mt Sampson W of The Forks on Cooktown–Bloomfield road, Jun 1973, *Webb* & *Tracey* 10793 (BRI, CANB); T.R.55, Jul 1974, *Hyland* 7342 (BRI); S.F.144, Fantail L.A., Mar 1981, *Unwin* 823 (QRS); S.F.756 Jordan, Lower Downey L.A., Nov 1991, *Hyland* 14332 (BRI, QRS); Daintree N.P., Adeline Creek headwaters, top of hill 929, May 1999, *Forster* PIF24543 & *Booth* (BRI); T.R.176, Shipton L.A., Oct 1999, *Forster* PIF25007 & *Booth* (BRI, QRS); Shipton's Flat, S of Cooktown, Apr 2002, *Bean* 18775 & *McDonald* (BRI). North Kennedy District: Herbert River, *anno* 1873, *Stone* (BRI); Koombooloomba on road S towards Tully River crossing, May 1972, *Webb* & *Tracey* 10907 (BRI); Echo Creek walking track, off North Davidson road, west of Tully, Aug 2002, *Ford* AF3564 & *Holmes* (BRI, NSW).

***Distribution and habitat*:** *Solanum magnifolium* is endemic to Queenland. It extends from Cooktown to S of Ravenshoe. There are historical records (including the type) from the Ingham and Cardwell areas (**Map 24**). It inhabits rainforest margins or where rainforest is invading adjacent eucalypt forest. Altitude ranges from 100–900 metres.

***Phenology*:** Flowers are recorded for May and from August–November; mature fruits for March and May and September–December.

***Notes*:** Mueller's description of *S. 'repandum'* in Fragmenta 6: 145 is based on 3 collections made by Dallachy in 1864. One of these specimens has a label that states the plant is "12 feet high" and has "fruits yellow". Mueller repeats these statements in his description. Another specimen has a strip of bark taken from an older stem that bears numerous short prickles. The leafy specimen is without prickles. Mueller in his description, states that the branchlets of *S. repandum* are on one part conspicuously aculeate, in another part unarmed. Bentham named *S. dallachii* in December 1868, in what amounts to a *nom. nov.* for *S. repandum* F.Muell. *non* G.Forst., and the same specimens serve as types for *S. dallachii*.

Symon (1981) chose as lectotype of *S. dallachii* one of the sheets at K. Furthermore,

he cited three MEL sheets as isolectotypes. While the sheet MEL11655 and its duplicate (MEL11659) may well be isolectotypes, the sheet MEL 11656 certainly is not as its label clearly shows that the date and locality of collection are different.

Mueller (1867) named *Solanum magnifolium*, based on a Dallachy specimen or specimens. The exact identity of the type specimen(s) has until now been unclear. A specimen collected by Dallachy from "Murray River" in August 1867 (MEL11658), precisely matches the details given in the protologue. In particular, this specimen has unusually small prickles on the branchlets (2–3 mm long), the leaves of the specimen are very large (up to 20 × 11 cm), and there are no fruits. These characteristics are confirmed in the protologue (*aculei* 1–1.5'" *longi*; *foliis ad* 9" *longa, ad* 5" *lata*; and "*baccae ignotae*"). The repand-dentate leaves, calyx length and anther length offer further confirmation that Mueller's description was taken from this specimen, and this specimen alone.

Significantly, Bentham (1868) cited Dallachy's "Murray River" specimen when reducing *S. magnifolium* to a variety of *S. stelligerum* Sm., thereby confirming that this was the specimen used by Mueller to describe his species.

***Conservation status*:** Although not seen in the Ingham–Cardwell area (the type locality) for 130 years, *S. magnifolium* appears to be moderately common further north, particularly around Bloomfield. No conservation code is recommended.

58. Solanum rixosum A.R.Bean **sp. nov.** Frutex perennis, erectus; folia ovata, integra vel non profunde lobata; aculei in ramulis sparsi; cortex tenuis nondescriptus; pili digitati pagina superiore folii absentes; calycis aculei absentes; pagina interna corollae sparse stellato-pilosa; ovarium pilis stellatis et Type-2 praeditum; fructus maturi virides, 19–24 mm diametro; pedicellis fructiferis 17–26 mm longis. **Typus:** Queensland. Moreton District: 0.5 km along Duck Creek road, near O'Reillys Guest House, 11 December 1999, *A.R. Bean* 15899 (holo: BRI (1 sheet + spirit); iso: AD, CANB, NSW).

Solanum sp. 1 in Ross (1986); *Solanum* sp. (Benarkin R.J. Henderson H297) in Henderson (2002).

***Illustration*:** Symon (1981: 248), as *S. furfuraceum*.

Erect, rhizomatous perennial shrub, 1–2 m high. Juvenile branchlets with 10–30 prickles per dm; leaves (in outline) broadly ovate, shallowly-lobed, with 1–3 pairs of lobes; lamina 9–15 cm long, 4–8 cm wide, with 10–40 prickles on upper surface. Adult branchlets yellow or rusty; prickles absent or present, 0–15 per decimetre, straight, acicular, 3–10 mm long, 10–14 times longer than wide; stellae very dense, 0.3–0.4 mm diameter, stalks 0–0.2 mm long; lateral rays 4–8, porrect; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire or shallowly lobed throughout; lobes 1–3 on each side, obtuse, lobing index 1–1.3; lamina 6–12 cm long, 2.9–4.8 cm wide, 1.8–2.6 times longer than broad, apex acute, base cuneate or obtuse, oblique part 0–4 mm long, obliqueness index 0–4 percent; petioles 0.7–1.4 cm long, 8–14% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–10, straight, acicular, 4–10 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.7–1.6 mm apart, 0.4–0.8 mm across, stalks 0–0.2 mm long; lateral rays 6–9, porrect or ascending; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* yellowish; prickles absent; stellae dense, 0.1–0.4 mm apart, 0.5–0.8 mm diameter, stalks 0.2–0.6 mm long; lateral rays 7–9, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 1–6 mm long, rachis prickles absent; 2–15-flowered, weakly andromonoecious, flowers 5-merous; pedicels 6–11 mm long at anthesis, same thickness throughout, 0.5–0.8 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes attenuate, 7–9 mm long; prickles absent at anthesis; stellae very dense, yellow or brown or rusty, 0.5–0.6 mm across, stalks 0–0.2 mm long, lateral rays 8–9, central

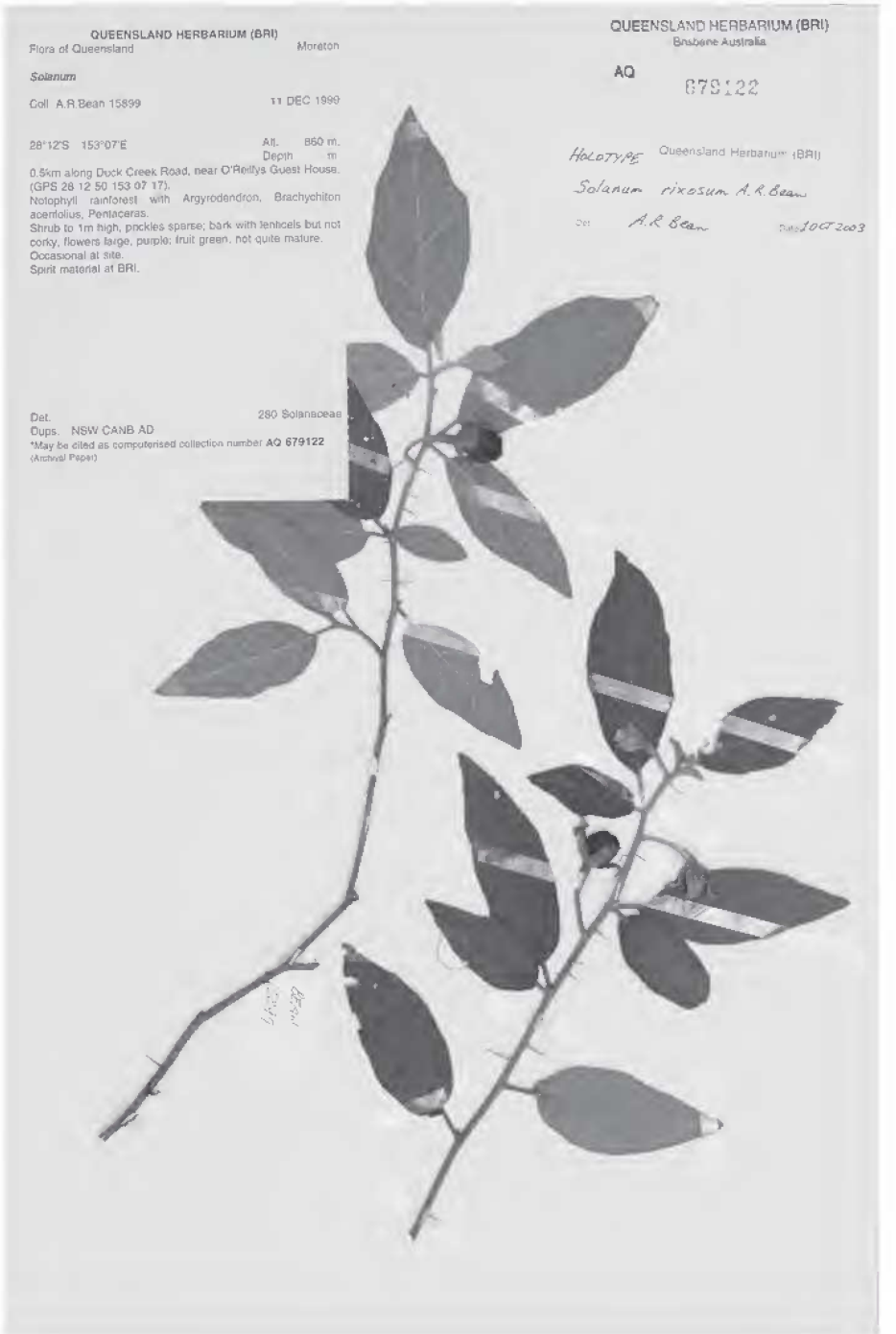

Fig. 34. Holotype of ***Solanum rixosum***.

ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 9–14 mm long, shallowly lobed, inner surface sparsely stellate-hairy; anthers 5–6 mm long; ovary with stellate and Type 2 hairs; functional style 7.5–10 mm long, erect, glabrous or with Type 2 hairs only or with stellate and Type 2 hairs, stellae 0.4–0.5 mm across, lateral rays 6–9, central ray 1–1.5 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, globular, 19–24 mm diameter, yellowish-green or green, 2 or 3-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.9–1.2 mm thick; pedicels 17–26 mm long in fruit, 1–1.4 mm thick at mid-point; seeds pale yellow, 2.2–2.7 mm long. **Fig. 34.**

***Specimens examined*: Queensland.** Burnett District: Bunya Mtns, Oct 1919, *White s.n.* (BRI); Bunya Mountains, Oct 1958, *Mitchener* (BRI); 2.5 km E of Mt Mowbullan, Bunya Mountains, Sep 1988, *Forster* PIF5795 & *Bird* (AD, BRI, MEL). Wide Bay District: Blackall Range, May 1910, *Keys* (BRI); Blackall Range, Dec 1916, *White s.n.* (BRI); Conondale Range (S.F.274 Conondale), Booloumba L.A., Oct 1982, *McDonald* 3575 & *Williams* (BRI, MEL, NSW); Mt Glastonbury, Sep 1986, *Sharpe* 4515 & *Bean* (BRI); Peters L.A., Conondale Ranges, Nov 1990, *Bean* 2694 (BRI). Darling Downs District: Cunninghams Gap, undated, *Bailey* (BRI); Killarney, Oct 1891, *coll. unknown* (BRI); Westcott, Bunya Mountains, Feb 1995, *Fairfax* 61 (BRI); 800 m S of Cherry Plain picnic area [Bunya Mountains], Nov 1996, *Holland* 1147 (BRI). Moreton District: Peecheys [Ashgrove, Brisbane], Aug 1888, *Simmonds* (BRI); Rosewood, May 1918, *White s.n.* (BRI); Tamborine Mtn, Dec 1921, *White* 1789 (BRI); Blackbutt Range near Moore, May 1967, *Griffin* (BRI); Benarkin S.F., *c.* 15 miles [24 km] E of Yarraman, May 1967, *Henderson* H253 (BRI); Levers Plateau, on Qld/N.S.W. border, *c.* 90 km SSW of Brisbane, Apr 1972, *Henderson* H1284 (BRI); D'Aguilar Range, NW of Brisbane, Apr 1972, *Moriarty* 906 (BRI); Ravensbourne, N of Toowoomba, Nov 1985, *Swarbrick* 8337 (BRI); S.F.809 Laceys Creek, D'Aguilar Range, Oct 1993, *Forster* PIF13992 (AD, BRI, K, MEL, QRS); 3.2 km along Duck Creek road, near O'Reillys Guest House, Jan 2000, *Bean* 15970 (BRI, NSW). **New South Wales.** North Coast: Toonumbar S.F., *c.* 26 km NW of Kyogle, Feb 1972, *Henderson* H1266, H1267 & *Parham* (BRI); Eden Creek Falls, Toonumbar S.F., Sep 1972, *Coveny* 4410 (BRI, NSW); lower slope of Mt Lindesay, 7 miles [11 km] ENE of Woodenbong, Sep 1972, *Coveny* 4542 & *Rodd* (BRI, NSW).

***Distribution and habitat*:** *Solanum rixosum* has a rather limited extent, from the Bunya Mountains and Mt Glastonbury in Queensland to the Kyogle district of far north-eastern New South Wales (**Map 21**). It grows in disturbed areas of notophyll rainforest, or in shrubby eucalypt forest close to rainforest.

***Phenology*:** Flowers are recorded for April and May and from August–December; mature fruits from November–May.

***Notes*:** *Solanum rixosum* is related to *S. furfuraceum*, but differs by the thin, non-descript bark; the stellae of the upper leaf surface very sparse to sparse; the fruiting pedicels 17–26 mm long (*vs.* 4–8 mm long for *S. furfuraceum*); the ovary with both stellate and Type 2 hairs; the calyx without Type 2 hairs, and the fruiting exocarp 0.9–1.2 mm thick (2–2.6 mm thick for *S. furfuraceum*).

S. rixosum differs from *S. magnifolium* by the larger stellae with a relatively shorter central ray, stellae stalked on the lower leaf surface, adult leaves (when lobed) with only 1–3 pairs of lobes, the thinner exocarp of the fruit and the broadly ovate juvenile leaves.

***Conservation status*:** Still moderately common in some areas, and not currently considered at risk.

***Etymology*:** From the Latin *rixosus* meaning quarrelsome. This refers to the differences of opinion of various botanists regarding the taxonomic status of this species.

59. Solanum serpens A.R.Bean, Austrobaileya 6: 248 (2002). **Type:** Queensland. Moreton District: Cainbable Creek track, Lamington National Park, 11 December 1999, *A.R. Bean* 15903 (holo: BRI; iso: CANB, MEL, NSW).

Solanum stelligerum var. *procumbens* C.T.White, Proc. Roy. Soc. Queensland 55: 72 (1944). **Type:** Queensland. Moreton District: Lamington National Park, 27 November 1942, *C.T. White* 11889 (holo: BRI, 2 sheets).

***Illustration*:** Bean (2002b: 249)

Prostrate, stoloniferous perennial shrub, 0–0.3 m high. Juvenile stage absent. Adult branchlets grey or rusty; prickles 15–35 per decimetre, straight, acicular, 3–6 mm long, 10–14 times longer than wide; stellae dense, 0.25–0.35 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 4–9 times as long as laterals, not

gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical, ovate or broadly ovate, entire; lamina 5.5–10 cm long, 2.5–4 cm wide, 1.4–2.9 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–3 mm long, obliqueness index 0–4 percent; petioles 0.6–1.5 cm long, 10–19% length of lamina, prickles present. *Upper leaf surface* green; prickles 0–8, straight, acicular, 2–4 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.6–3 mm apart, 0.2–0.5 mm across, sessile; lateral rays 7 or 8, porrect; central ray 3–6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white, yellowish or rusty; prickles absent; stellae moderate to very dense, 0.05–0.3 mm apart, 0.3–0.4 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 3–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 0–3 mm long, rachis prickles absent; 1–4-flowered, weakly andromonoecious, flowers 5-merous; pedicels 11–28 mm long at anthesis, same thickness throughout, 0.6–0.8 mm thick at mid-point, prickles absent or present. Calyx tube 1.5–2.5 mm long, lobes attenuate, 4–7 mm long; prickles absent at anthesis; stellae dense, transparent, 0.3–0.4 mm across, sessile, lateral rays 7 or 8, central ray 2–5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 10–13 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 3.5–5.5 mm long; ovary with stellate and Type 2 hairs; functional style 7.5–8 mm long, erect, with stellate hairs only, stellae 0.5–0.7 mm across, lateral rays 8–9, central ray 1–2 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 14–16 mm diameter, yellowish-green or green, 1-locular (septum absent or incomplete); mesocarp moist but not juicy; exocarp 0.6–0.8 mm thick; pedicels 20–32 mm long in fruit, 0.6–0.8 mm thick at mid-point; seeds pale yellow, 3.5–4 mm long.

***Specimens examined*: Queensland.** Moreton District: Tamborine Mtn, *anno* 1888, *Simmonds* 346 (BRI); Little Nerang River, Jan 1916, *White s.n.* (BRI); Lamington N.P., Nov 1942, *White* 11889 (BRI); Cainbable Ck track, Lamington N.P., *c.* 1 km SSE of Cainbable Falls, Nov 1995, *McDonald* 6176 (BRI); Nicholl's scrub, *c.* 6 km SW of Currumbin, Mar 2001, *Bean* 17398 (BRI); Darlington Range, Upper Ormeau, Feb 2002, *Bean* 18521 & *Leiper* (BRI); Rosins Lookout, Beechmont, Dec 2002, *Bean* 19681 (BRI). **New South Wales.** North Coast: Three Mile scrub, near Byron Bay, Nov 1898, *Forsyth* (NSW); Byron Bay, Nov 1903, *Maiden & Boorman s.n.* (NSW); Levers Plateau on Qld–N.S.W. border, *c.* 90 km SSW of Brisbane, Apr 1972, *Henderson* H1299 (BRI); Brunswick Heads Nature Reserve, Oct 2000, *Bean* 16929 (BRI).

***Distribution and habitat*:** *Solanum serpens* is found from Mt Tamborine in Queensland to Byron Bay In N.S.W. (**Map 23**), although the Byron Bay population is probably extinct. It inhabits notophyll rainforest, especially where there are canopy gaps.

***Phenology*:** Flowers are recorded between October to April; fruits in March and April.

***Notes*:** *S. serpens* is rather variable in morphology, and intermediate forms with *S. acanthodapis* exist (Bean 2002b).

***Conservation status*:** It is known from several locations, some of which are on protected land. No conservation status is recommended at this time.

60. Solanum acanthodapis A.R.Bean, Austrobaileya 6: 250 (2002). **Type:** New South Wales. North Coast: Big Scrub Flora Reserve, *c.* 20 km N of Lismore, 2 December 2000, *A.R. Bean* 17075 (holo: BRI; iso: AD, K, L, MEL, NSW).

***Illustration*:** Bean (2002b: 251)

Prostrate, stoloniferous perennial shrub, 0–0.3 m high. Juvenile stage absent. Adult branchlets terete or ridged, brown; prickles 25–65 per decimetre, straight, acicular, 3–7 mm long, 9–20 times longer than wide; stellae sparse to dense, 0.2–0.35 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire or shallowly lobed throughout; lobes 2–4 on each side, acute, lobing index 1–1.4; lamina 5.5–9.5 cm long, 2.8–4.5 cm wide, 1.6–2.3 times longer than broad, apex acute, base cuneate or obtuse, oblique part 0–5 mm long, obliqueness index

0–5 percent; petioles 1–1.7 cm long, 14–29% length of lamina, prickles present. *Upper leaf surface* green; prickles 20–60, straight, acicular, 2–8 mm long, prickles present on midvein and lateral veins; stellate hairs confined to midrib; ordinary stellae absent from surface; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green to white or yellowish; prickles 10–30, straight, acicular, present on midvein and lateral veins; stellae sparse to very dense, 0.05–0.25 mm apart, 0.25–0.35 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.2–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-umbellate or pseudo-racemose, common peduncle 0–7 mm long, rachis prickles absent or present; 2–8-flowered, strongly or weakly andromonoecious, flowers 5-merous; pedicels 6–20 mm long at anthesis, same thickness throughout, 0.25–0.4 mm thick at mid-point, prickles absent or present. Calyx tube 2–3 mm long, lobes attenuate, 1.5–3.5 mm long; prickles absent or present at anthesis, 0–2 per flower, 0.5–1 mm long; stellae moderate, transparent or purple, 0.2–0.3 mm across, sessile, lateral rays 7 or 8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 8–12 mm long, shallowly lobed, inner surface glabrous; anthers 4–5 mm long; ovary with Type 2 hairs only; functional style 6–7.5 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 15–18 mm diameter, yellowish-green, 1-locular (septum absent or incomplete); placenta in cross-section sessile, elliptical; mesocarp moist but not juicy; exocarp *c.* 0.8 mm thick; pedicels 21–30 mm long in fruit, *c.* 0.8 mm thick at mid-point; seeds pale yellow, 3.5–4 mm long.

***Specimens examined*: New South Wales.** North Coast: Victoria Park, 4 miles [6 km] SSW of Alstonville, Aug 1969, *Clark* 1260 *et al.* (BRI, NSW); Rotary Park, Lismore, Dec 2000, *Bean* 17081 (BRI); Booyong Flora Reserve, ENE of Lismore, Dec 2000, *Bean* 17083 (BRI); Victoria Park Nature Reserve, Apr 2001, *Bean* 17564 (AD, BRI, MEL, NSW).

***Distribution and habitat*:** *Solanum acanthodapis* is endemic to the extreme north-east of New South Wales, around Lismore (**Map 22**). It grows in canopy-gaps in notophyll rainforest.

***Phenology*:** Flowers recorded between August and February; fruits in March and April.

***Notes*:** Well-developed plants of this species form a dense prickly carpet, no more than 20 centimetres high. The fruits are borne virtually at ground level, and hidden from view by the foliage. I have not observed any clues that would indicate the method of seed dispersal.

***Conservation status*:** Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU C2a(i)).

61. Solanum intonsum A.R.Bean **sp. nov.** Frutex perennis erectus; aculei ramulorum recti, ad basim lati, sparse distributi vel saepe absentes; folia adulta integra, lanceolata usque ovata; pagina superior folii protostellas gerens; stellae vulgatae sessiles, latitudine 0.15–0.25 mm, parcae usque densae; aculei calycis absentes; ovarium pilos type-2 tantum gerens; fructus 15–17 mm diametro, virides maturitate; pedicelli fructiferi 7–10 mm longi. **Typus:** Queensland. Cook District: Smiths track, Barron Gorge National Park, 6 May 2000, *A.R. Bean* 16542 (holo: BRI (1 sheet + spirit); iso: MEL, NSW).

Solanum sp. (Font Hills J.R. Clarkson+ 7901) in Henderson (2002).

Erect, rhizomatous perennial shrub, 0.8–2 m high. Juvenile branchlets with 30–50 prickles per dm, 1–7 mm long; leaves (in outline) ovate, entire or shallowly-lobed, with 2 or 3 pairs of lobes; lamina 9.5–14 cm long, 5.5–6 cm wide, with 0–7 prickles on upper surface. Adult branchlets yellow; prickles absent or present, 0–5 per decimetre, straight, broad-based, 0.5–6 mm long, 4–7 times longer than wide; stellae dense to very dense, 0.3–0.5 mm diameter, stalks 0–0.2 mm long; lateral rays 6–8, porrect; central ray 0.3–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate or ovate, entire; lamina 4.5–16.5 cm long, 1.3–6.5 cm wide, 2.1–4.5 times longer than broad, apex acute, base cuneate or obtuse, oblique part 0–5 mm long, obliqueness index 0–6 percent; petioles 0.3–2.5 cm long, 7–30%

length of lamina, prickles absent. *Upper leaf surface* green or grey-green; prickles absent; stellate hairs distributed throughout; protostellae present; ordinary stellae density moderate to dense, 0.1–0.2 mm apart, 0.15–0.25 mm across, sessile; lateral rays 4–10, ascending; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white; prickles absent; stellae dense to very dense, 0.05–0.1 mm apart, 0.4–0.6 mm diameter, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.2–0.6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-umbellate or pseudo-racemose, common peduncle 0–5 mm long, rachis prickles absent; 2–7-flowered, weakly andromonoecious, flowers 5-merous; pedicels 4–9 mm long at anthesis, same thickness throughout, 0.5–0.8 mm thick at mid-point, prickles absent. Calyx tube 3–4.5 mm long, lobes attenuate, 1–5 mm long; prickles absent at anthesis; stellae dense to very dense, yellow, 0.25–0.4 mm across, stalks 0–0.1 mm long, lateral rays 7 or 8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 9–13 mm long, shallowly lobed, inner surface sparsely stellate-hairy; anthers 4.5–5.5 mm long; ovary with Type 2 hairs only; functional style 8–9 mm long, erect, with stellate hairs only or with Type 2 hairs only, stellae *c.* 0.3 mm across, lateral rays 5–6, central ray 0.5–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 15–17 mm diameter, green, 2-locular; placenta in cross-section sessile, linear; mesocarp moist but not juicy; exocarp *c.* 2 mm thick; pedicels 7–10 mm long in fruit, 0.8–1 mm thick at mid-point; seeds pale yellow, 2.3–2.8 mm long. **Fig. 35.**

***Specimens examined*: Queensland.** Cook District: sources of Stuart's River [Stewart River near Coen], 1891, *Johnson s.n.* (MEL); Hartley's Creek, Cook Highway, Jul 1936, *Flecker* 1972, 1986 (BRI); Mt Carbine, Nov 1967, *Cassels* (BRI, QRS); S.F.700, Mar 1968, *Hyland* 4068 (BRI, QRS); Flinders Island, *c.* 7 km N of Bathurst Head, Jun 1978, *Clarkson* 2215 (BRI); Earl Hill near Cairns, Oct 1979, *Batianoff* 1292 & *McDonald* (AD, BRI); Richards Creek, Mount Mulligan, Apr 1984, *Clarkson* 5268 (AD, BRI, QRS); 'Font Hills', *c.* 15 km W of Mount Molloy, Apr 1989, *Clarkson* 7901 & *Henderson* (AD, BRI, DNA); Mt Alto, *c.* 4 km SSW of Mt Carbine, Apr 1989, *Clarkson* 7939 & *Henderson* (BRI); Cape Melville N.P., 2 km SSE of Temple Hill, May 1993, *Fell* DGF3172 & *Stanton* (BRI, CANB); S.F.144, Chowchilla L.A., Mar 1994, *Hyland* 15058 (QRS); Bakers Blue Mtn, Apr 1995, *Hyland* 15294 (QRS); Smiths Track, Barron Gorge N.P., Mar 1997, *Jago* 4284 (BRI).

***Distribution and habitat*:** *Solanum intonsum* is endemic to Queensland. Currently known to extend from Cape Melville to just south of Cairns, and west to Mt Mulligan (**Map 25**). There is also an historical record from the Stewart River near Coen. It grows on hilly to mountainous terrain, in shrubby eucalypt woodland or on the margins of rainforest or vine thicket.

***Phenology*:** Flowers are recorded from March to November; mature fruits in October and November.

***Notes*:** *S. intonsum* is related to *S. magnifolium*, but differs by the upper leaf surface with protostellae and moderate to dense ordinary stellae; the central ray of the stellate hairs much shorter on all plant parts; the longer hypanthium and attenuate calyx lobes; the smaller fruits, green at maturity and on shorter pedicels and the ovary with Type 2 hairs only.

***Conservation status*:** Moderately widespread. Not considered at risk.

***Etymology*:** From the Latin *in-* meaning not, and *tonsus* meaning shaven, referring to the dense but uniform indumentum of the leaves.

62. Solanum furfuraceum R.Br., Prodr. 446 (1810). **Type:** [Queensland. Port Curtis District:] "Broadsound", September 1802, *R. Brown* (lecto: BM (Bennett No. 2672); isolecto: MEL [MEL11620]), fide Symon (1981).

Erect, rhizomatous perennial shrub, 1–3 m high. Juvenile branchlets with 60–90 prickles per dm; leaves (in outline) ovate, entire or shallowly-lobed, with 2 or 3 pairs of lobes; lamina 6–8 cm long, 2.5–4 cm wide, with 2–10 prickles on upper surface. Adult stems bark furrowed, corky. Adult branchlets brown; prickles absent or present, 0–15 per decimetre, straight, acicular, 4–10 mm long, 9–12 times longer than wide; stellae dense, 0.4–0.9 mm

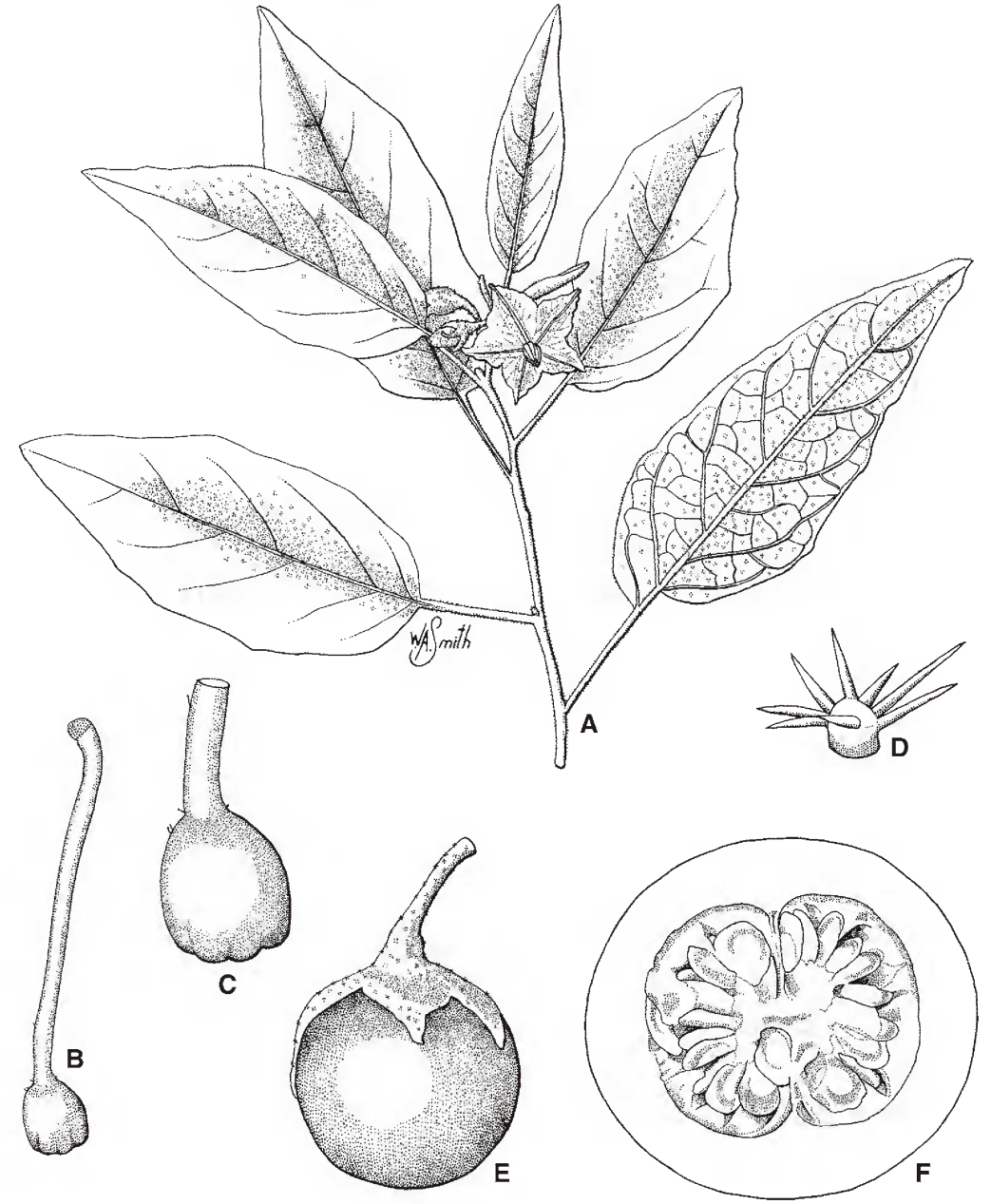

Fig. 35. ***Solanum intonsum***. A. flowering branchlet × 0.8. B. ovary and style × 6. C. ovary, bearing a few Type 2 hairs × 12. D. stellate hair, upper leaf surface × 100. E. mature fruit and calyx × 2. F. transverse section of fruit × 3. all from *Bean* 16542.

diameter, stalks 0.1–0.6 mm long; lateral rays 4–8, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 3–11.5 cm long, 1.1–4.5 cm wide, 2.1–2.7 times longer than broad, apex acute, base cuneate or obtuse, oblique part 0–7 mm long, obliqueness index 0–7 percent; petioles 0.5–1.3 cm long, 8–18% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–2, straight, acicular, 5–7 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae present; ordinary stellae density sparse to moderate, 0.4–0.7 mm apart, 0.4–0.8 mm across, stalks 0–0.3 mm long; lateral rays 4–7, porrect to ascending; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs present, 0.1–0.3 mm apart, not gland-tipped, 0.1–0.3 mm long; Type 2 hairs absent. *Lower leaf surface* yellowish or rusty; prickles absent; stellae dense, 0.1–0.3 mm apart, 0.6–1 mm diameter, stalks 0.1–0.7 mm long; lateral rays 4–8, porrect; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, pseudo-racemose, common peduncle 9–12 mm long, rachis prickles absent; 5–8-flowered, weakly andromonoecious, flowers 5-merous; pedicels 2–8 mm long at anthesis, same thickness throughout, 0.5–0.7 mm thick at mid-point, prickles absent. Calyx tube 1.5–3.5 mm long, lobes deltate or attenuate, 2–5 mm long; prickles absent at anthesis; stellae dense, transparent, 0.5–0.8 mm across, stalks 0–0.2 mm long, lateral rays 4–8, central ray 1–1.5 times as long as laterals, not gland-tipped or gland-tipped; finger hairs absent; Type 2 hairs present. Corolla mauve or purple, 9–17 mm long, shallowly lobed, inner surface glabrous or sparsely stellate-hairy; anthers 4.5–7 mm long; ovary glabrous; functional style 8.5–10 mm long, erect, glabrous or with stellate hairs only, stellae *c.* 0.4 mm across, lateral rays *c.* 4, central ray *c.* 2 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, oblate or globular, 15–21 mm diameter, yellowish-green or green, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 2–2.6 mm thick; pedicels 4–8 mm long in fruit, 0.6–0.8 mm thick at mid-point; seeds pale yellow, 2.5–2.6 mm long. *Corky Nightshade.* **Fig. 5.**

***Specimens examined*: Queensland.** North Kennedy District: Wild Horse Mtn, W of Townsville, May 1996, *Cumming* 14644 (BRI). South Kennedy District: 'Havilah', Dec 1992, *Fensham* 965 (BRI). Leichhardt District: Rosedale, near Baralaba, Sep 1959, *Johnson* 919 (BRI); Dipperu N.P., Sep 1971, *McDonald* 116 (BRI); Isla Gorge, *c.* 28 km SW of Theodore, Aug 1973, *Sharpe* 645 & Hockings (BRI); near Yatton Ck, *c.* 93 km from Marlborough, Sep 1973, *Moriarty* 1467 (BRI); 'Clifton', northern Boomer Range, Feb 1993, *Fensham* 717 (BRI); Auburn Range S.F., *c.* 50 km S of Thangool, Jun 1996, *Bean* 10339 (BRI, MEL, NSW). Port Curtis District: Marmor, near Rockhampton, Mar 1920, *Francis s.n.* (BRI); Callide valley, Apr 1937, *White* 10773 (BRI); Ogmore, Sep 1943, *Blake* 15311 (BRI); Jim Crow Mtn, Rockhampton district, Apr 1963, *McKee* 10272 (BRI); Dan Dan Scrub, S.F.53, 20 km SW of Calliope, Nov 1987, *Gibson* 1116 (AD, BRI); *c.* 37 km WSW of Ridgelands, Fitzroy Shire, Apr 1990, *Anderson* 4846 (BRI); 15 km NE of Biloela, 3 km N of Callide Dam, Jul 1992, *Thompson* BIL24 (BRI); E boundary of Triangle Creek, Taunton N.P., Oct 1995, *Melzer* RM632 (BRI); S.F.114, 14 km from top ridge near Fairview HS, Dec 1998, *Batianoff* 98125 *et al.* (BRI); western edge of S.F.69, SE of Biloela, Dec 1999, *Bean* 15928 (BRI, MEL, MO). MARANOA DISTRICT: *c.* 20 miles [32 km] W of Mitchell, Mar 1950, *Everist s.n.* (BRI, CANB). Burnett District: Coalstoun crater, Nov 1970, *Bell* 263 (BRI); Mt Blandy, Burnett River, Dec 1981, *Forster* 1051 (BRI); *c.* 15 km NW of Abercorn, near S edge of Coominglah S.F., Jan 2003, *Bean* 19727 (BRI).

***Distribution and habitat*:** *Solanum furfuraceum* is endemic to Queensland. In subcoastal areas extending from west of Townsville to the Gayndah area, and with a disjunct occurrence west of Mitchell (**Map 21**). Most records come from within 200 km of Rockhampton. It grows in vine thicket, communities dominated by brigalow (*Acacia harpophylla*) or bottle trees (*Brachychiton rupestris*), or in nearby shrubby eucalypt woodland. Soils are moderately to very fertile.

***Phenology*:** Flowers are recorded for most months of the year; mature fruits from March–June and September–December.

***Notes*:** *Solanum furfuraceum* and *S. sporadotrichum* are notable for their corky bark, very conspicuous on adult plants, but usually visible even on herbarium specimens. *S. furfuraceum* forms a handsome shrub with its yellowish bark and often abundant purple flowers.

***Conservation status*:** Widespread. Not considered at risk.

63. Solanum sporadotrichum F.Muell., Chem. & Druggist (Melb. Chemist) Oct. 1882 p. 48 (1882). **Type:** Queensland. North Kennedy District: Mount Dryander, undated, *Kilner & E. Fitzalan* (lecto: MEL [MEL12282]), *fide* Symon (1981).

Erect, rhizomatous perennial shrub, 1.5–4 m high. Juvenile branchlets with *c.* 130 prickles per dm, 1–5 mm long; leaves (in outline) broadly ovate, shallowly-lobed, with 3–5 pairs of lobes; lamina 6.5–8.5 cm long, 5–6 cm wide, with 80–120 prickles on upper surface. Bark on adult stems furrowed, corky. Adult branchlets brown; prickles absent or present, 0–3 per decimetre, straight, acicular, 4–7 mm long, 10–12 times longer than wide; stellae sparse, 0.3–0.6 mm diameter, sessile; lateral rays 5–8, porrect; central ray 0.3–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, shallowly lobed throughout; lobes 3 or 4 on each side, obtuse, lobing index 1.1–1.4; lamina 6.5–11 cm long, 3.5–5.5 cm wide, 1.6–2.1 times longer than broad, apex obtuse or acute, base obtuse, oblique part 0–6 mm long, obliqueness index 0–8 percent; petioles 1–2.2 cm long, 13–25% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–30, straight, acicular, 1–6 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae sparse, 0.9–1.6 mm apart, 0.4–0.5 mm across, sessile; lateral rays 4–8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 0–15, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae moderate to dense, 0.4–0.8 mm apart, 0.5–0.9 mm diameter, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray 0.3–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 11–16 mm long, rachis prickles absent; 3–7-flowered, weakly andromonoecious, flowers 5-merous; pedicels 5–10 mm long at anthesis, same thickness throughout, 0.5–0.8 mm thick at mid-point, prickles absent. Calyx tube 2–3 mm long, lobes deltate or attenuate, 2.5–7.5 mm long; prickles absent at anthesis; stellae moderate to dense, transparent, 0.3–0.5 mm across, sessile, lateral rays 5–7, central ray 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–12 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 4.5–7.5 mm long; ovary glabrous; functional style 10–11.5 mm long, erect, glabrous. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, *c.* 13 mm diameter, green, 1-locular (septum absent or incomplete); placenta in cross-section sessile, semi-circular; mesocarp moist but not juicy; exocarp 2.3–2.5 mm thick; pedicels 6–13 mm long in fruit, 0.5–0.8 mm thick at mid-point; seeds pale yellow, *c.* 2.9 mm long.

***Specimens examined*: Queensland.** North Kennedy District: near crest of ridge leading to easterly peak of Mt Dryander, Jul 1974, *Henderson* H2213 *et al.* (BRI); Magnetic Island, near top of Mt Cook, Aug 1982, *Sandercoe* 904 (BRI); Mingela Bluff, Aug 1989, *Cumming* 9300 (BRI); 'Fanning River', 25 km NW of Mingela, Sep 1989, *Fell* 64 & *Cumming* (BRI); Mount Wickham, Jul 1993, *Fensham* 991 (BRI); Leichhardt Range, Jul 1993, *Fensham* 992 (BRI); Squally Bay, Gloucester Island, Apr 1994, *Batianoff* 940478 & *Figg* (BRI); East Coast bay, S of Mt Sunter, Conway N.P., May 1994, *Batianoff* 940579 & *Dillewaard* (BRI); Flame Tree Hill, *c.* 3 km ESE of Airlie Beach, Jun 1994, *McDonald* 5874 & *Champion* (BRI); headland W of Horseshoe Bay, Magnetic Island, Jan 1998, *Cumming* 16758 (BRI). South Kennedy District: Calder Island, May 1992, *Halford* Q1321 & *Crombie* (AD, BRI); Calder Island, *c.* 50 km NE of Mackay, Jun 2000, *Bean* 16693 & *Champion* (BRI, DNA, MEL, NSW).

***Distribution and habitat*:** *Solanum sporadotrichum* is endemic to Queensland ranging from west of Townsville to Airlie Beach, and on Calder Island (**Map 20**). It grows in semi-evergreen vine thicket, margins of littoral notophyll rainforest and (at Airlie Beach and Mt Dryander) in well-developed *Argyrodendron*-dominated rainforest.

***Phenology*:** Flowers are recorded for January, May, June, July and September; mature fruits in May, June and August.

***Notes*:** Closely related to *S. furfuraceum* (both have conspicuously corky bark), but differing by the lobed or angled leaves, the very sparse to sparse stellate indumentum and absence of finger hairs on the upper leaf surface, and the (usually) prickly adult leaves.

***Conservation status*:** *S. sporadotrichum* is listed as "Rare" under the Queensland Nature Conservation Act, 1992. The species is more widespread than was known in 1992, and I do not consider it to be currently at risk.

64. Solanum francisii A.R.Bean **sp. nov.** Frutex perennis altus foliis atrovirentibus non profunde lobatis; ramuli porcati, aculeis numerosis et stellis 0.15–0.25 mm diametro; pagina superior folii aculeis 50–90 praedita; pedicelli floriferi 7–13 mm longi sub anthesi; aculei calycis 4–11 vel interdum absentes; pagina interna corollae sparse stellato-pilosa; fructus maturi virides, globulares, 14–22 mm diametro. **Typus:** Queensland. South Kennedy District: Eungella, 2 September 1938, *C.T. White* 12972 (holo: BRI; iso: CANB, MEL, *distribuendi*).

Erect, rhizomatous perennial shrub, 2.5–4 m high. Juvenile stage unknown. Adult branchlets ridged, brown; prickles 10–140 per decimetre, straight, acicular or broad-based, 4–10 mm long, 5–11 times longer than wide; stellae sparse, 0.15–0.25 mm diameter, sessile; lateral rays 5–7, porrect; central ray absent or present, 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, shallowly lobed throughout; lobes 3–5 on each side, acute, lobing index 1.1–1.4; lamina 13–21 cm long, 6.5–10 cm wide, 1.9–2.4 times longer than broad, apex acute, base obtuse or cordate, oblique part 2–6 mm long, obliqueness index 1–3 percent; petioles 1.6–3.5 cm long, 11–18% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 50–90, straight, acicular, 4–8 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.4–3 mm apart, 0.2–0.3 mm across, sessile; lateral rays 7–9, porrect; central ray 0.2–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 5–20, straight, acicular, present on midvein and lateral veins; stellae moderate, 0.3–0.8 mm apart, 0.2–0.3 mm diameter, sessile; lateral rays 7–9, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 1–22 mm long, rachis prickles absent; 9–14-flowered, with all flowers bisexual and 5(6)-merous; pedicels 7–13 mm long at anthesis, same thickness throughout, 0.5–0.7 mm thick at mid-point, prickles absent or present. Calyx tube 3.5–4.5 mm long, lobes attenuate, 1.5–7 mm long; prickles absent or present at anthesis, 0–11 per flower, 3–6 mm long; stellae sparse to moderate, transparent, 0.2–0.3 mm across, sessile, lateral rays 7 or 8, central ray 0.3–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla white or mauve, 12–17 mm long, shallowly or deeply lobed, inner surface sparsely stellate-hairy; anthers *c.* 5.8 mm long; ovary with Type 2 hairs only; functional style *c.* 10 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 4–8 mm long. Mature fruits 1–8 per inflorescence, globular, 14–22 mm diameter, yellowish-green or green, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 1–1.4 mm thick; pedicels 16–23 mm long in fruit, 0.9–1.2 mm thick at mid-point; seeds white or pale yellow, 2–2.3 mm long. **Fig. 36.**

***Specimens examined*: Queensland.** South Kennedy District: Eungella Range, via Mackay, Oct 1922, *Francis s.n.* (BRI); catchment of Mt William Creek, Eungella N.P., Dec 2002, *Meyer & Bloor s.n.* (BRI); Snake Road, S.F.62, NE of Eungella township, Feb 2003, *Bean* 20031 (BRI, MEL); Chelman's Road, S.F.62, NE of Eungella, Feb 2003, *Bean* 20057 (BRI).

***Distribution and habitat*:** *Solanum francisii* is endemic to Queensland. Recorded only from the Eungella area, west of Mackay (**Map 12**). It grows in high-rainfall notophyll rainforest at altitudes of 1000–1100 metres.

***Phenology*:** Flowers recorded for September and October; mature fruits in February.

***Notes*:** *S. francisii* is related to *S. sporadotrichum*, but differs by: the bark non-corky, except at the base of large plants; the longer and wider leaves with acute lobes; smaller stellae on all plant parts; inner surface of corolla sparsely stellate-hairy; calyx prickles usually present; and calyx with Type 2 hairs.

***Conservation status*:** *S. francisii* is known only from a small section of the Eungella N.P. and an adjacent State Forest. It is threatened by low

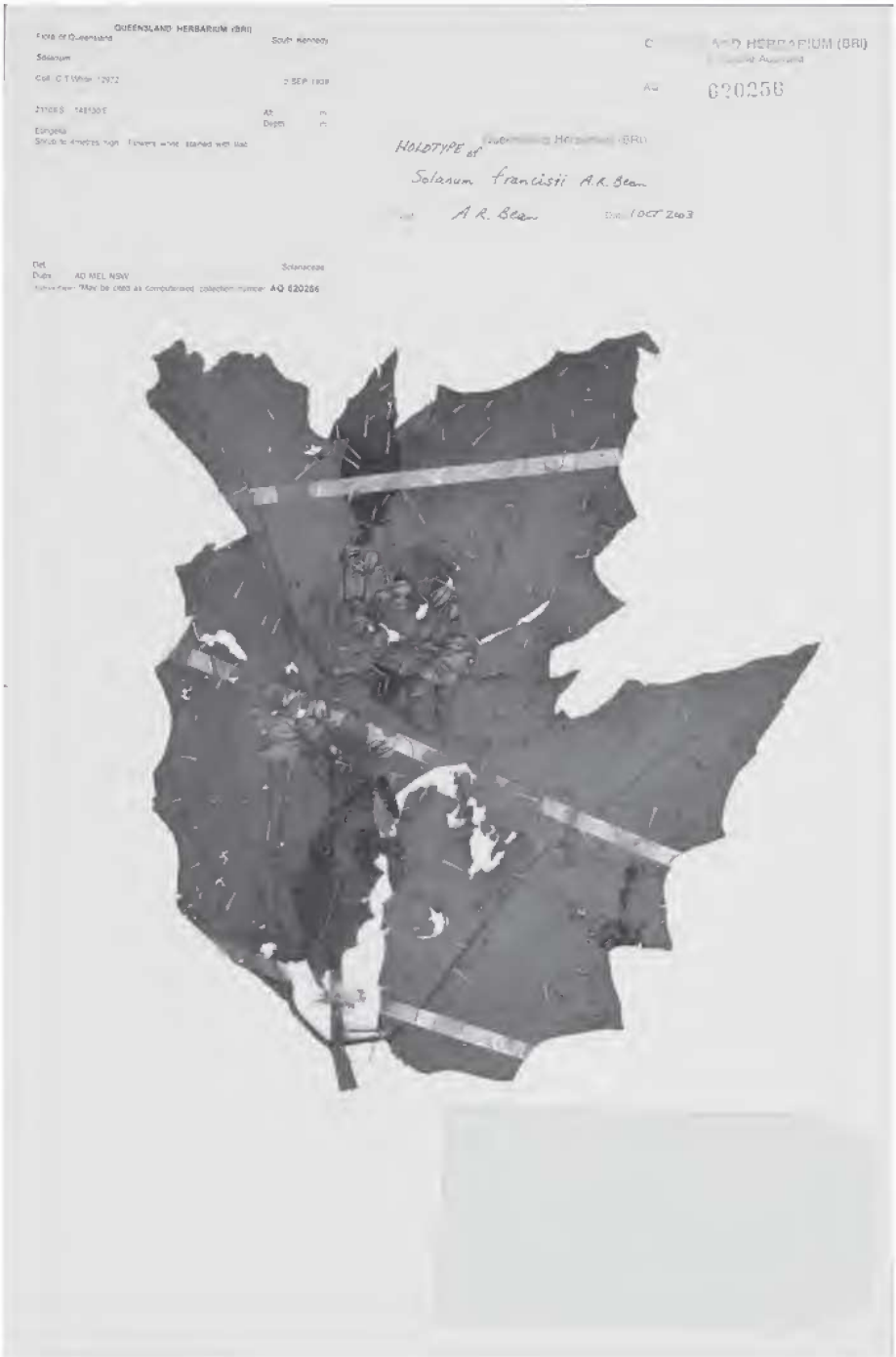

Fig. 36. Holotype of ***Solanum francisii***.

population size and weeds (especially *Lantana camara*). Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU B1ab(iii,v)+2ab(iii,v); C1+2a(i); D1).

***Etymology*:** Named for W.D. Francis (1889–1959), the first collector of the species. Mr Francis was the author of the well known book "Rainforest Trees of Australia", and was for a time the Director of the Queensland Herbarium.

65. Solanum dumicola A.R.Bean **sp. nov.** Fruticulus; cortice tenui, nondescripto; ramulorum aculei 30–70 per decimetrum; folia adulta integra, ovata usque late ovata; pagina superior folii viridis, stellis sparsis praedita, pilis digitatis carens; inflorescentiae 1–3-florae; pagina interna corollae sparse stellato-pilosa; calyx stellis 0.25–0.4 mm latitudine ornatus, pilis type-2 gerens sed aculeis carens; fructus maturi virides, pedicellis 10–24 mm longis. **Typus:** Queensland. Leichhardt District: Cannondale scrub, Amphitheatre section, Expedition National Park, 6 November 1998, *P.I. Forster* PIF23858 & *R. Booth* (holo: BRI (1 sheet + spirit); iso: MEL, QRS).

Sprawling or erect, herbaceous resprouter, 0.3–0.5 m high. Juvenile stage unknown. Adult branchlets brown or green; prickles 30–70 per decimetre, straight, acicular, 6–10 mm long, 13–20 times longer than wide; stellae dense, 0.25–0.6 mm diameter, stalks 0–0.2 mm long; lateral rays 4–7, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, entire; lamina 4.5–12.5 cm long, 3–7.5 cm wide, 1.6–1.9 times longer than broad, apex obtuse or acute, base cuneate, oblique part 0–7 mm long, obliqueness index 0–7 percent; petioles 0.6–2.8 cm long, 13–25% length of lamina, prickles present. *Upper leaf surface* green; prickles 0–20, straight, acicular, 3–7 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae sparse, 0.4–1.7 mm apart, 0.3–0.7 mm across, stalks 0–0.15 mm long; lateral rays 5–8, porrect; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* greenish-white; prickles 0 or 1, straight, acicular, absent or present on midvein only; stellae dense, 0.15–0.4 mm apart, 0.6–0.8 mm diameter, stalks 0–0.2 mm long; lateral rays 5–8, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle 1.5–4 mm long, rachis prickles present; 1–3-flowered, strongly andromonoecious, flowers 5-merous; pedicels 8–13 mm long at anthesis, same thickness throughout, 0.9–1.1 mm thick at mid-point, prickles absent or present. Calyx tube 3–5 mm long, lobes attenuate, 4–6 mm long; prickles absent at anthesis; stellae dense, white, 0.25–0.4 mm across, sessile, lateral rays 5–8, central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla mauve, 7–11 mm long, shallowly lobed, inner surface sparsely stellate-hairy; anthers 4–5 mm long; ovary with stellate and Type 2 hairs; functional style 5–6 mm long, erect, with stellate and Type 2 hairs, stellae *c.* 0.25 mm across, lateral rays 6–8, central ray 1–1.5 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 16–19 mm diameter, green; mesocarp moist but not juicy; exocarp 0.8–1 mm thick; pedicels 10–24 mm long in fruit, 1.1–2 mm thick at mid-point; seeds pale yellow, 2–2.3 mm long. **Fig. 37.**

***Specimens examined*: Queensland.** Leichhardt District: Injune–Rolleston road, *c.* 77 km from Injune, Sep 1974, *Moriarty* 1556 (BRI, CANB). Warrego District: above Cattle Creek, 'Carnarvon' station, NW of Injune, Jun 1999, *McDonald* 6768 (BRI); 'Carnarvon' station, Mar 2001, *Fensham* 4249 (BRI). Maranoa District: The Tombs, Maranoa River W branch, *c.* 110 km NW of Injune, Jun 1977, *Crisp* 3113A (BRI).

***Distribution and habitat*:** *Solanum dumicola* is endemic to Queensland. Known from a few scattered locations in south central Queensland (**Map 23**). It usually grows in semi-evergreen vine thicket or Belah (*Casuarina cristata*) forest on clayey soil, but there is one record from ironbark woodland on sandy soil.

***Phenology*:** Poorly known. Flowers are recorded for June and November; mature fruits for March and November.

***Notes*:** *S. dumicola* is related to *S. furfuraceum*, but differs by its small size; the thin non-

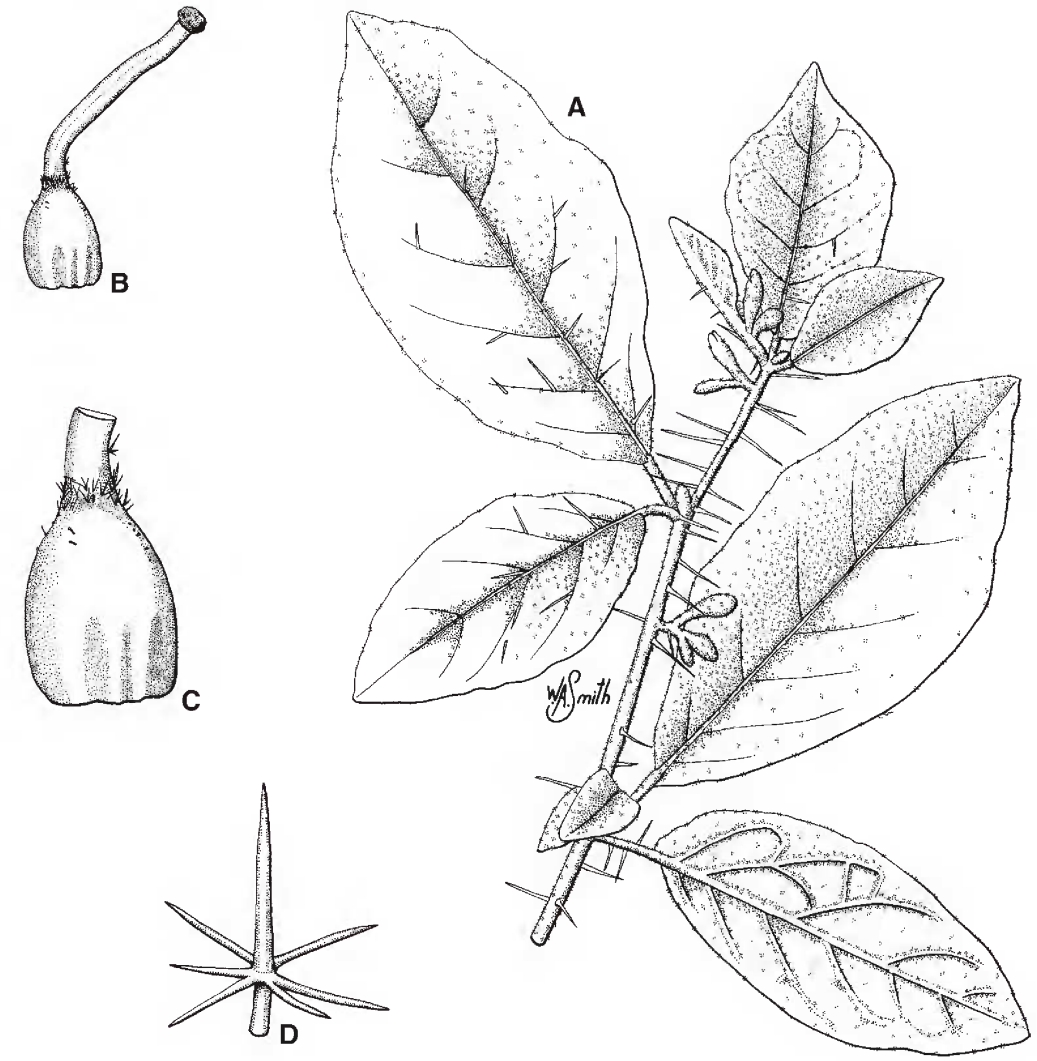

Fig. 37. ***Solanum dumicola***. A. flowering branchlet × 1. B. ovary and style × 6. C. ovary with stellate and Type 2 hairs × 12. D. stellate hair, upper leaf surface × 60. A, D, *Moriarty* 1556; B–C, *Forster* 23858.

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descript bark, the more frequent prickles on the branchlets; the broader adult leaves; the sparse stellate indumentum and absence of finger hairs on the upper leaf surface; the reduced 1–3 flowered inflorescence; the smaller stellae on the calyx; and the longer fruiting pedicels.

***Conservation status*:** *S. dumicola* has been recorded from 4 locations, and is currently known from 2 locations. It is threatened by clearing of regrowth forest. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU B2ab(iii)). One population is within the Expedition National Park.

***Etymology*:** The epithet is from the Latin, and means "dweller in thickets", a reference to the usual habitat.

66. Solanum tetrathecum F.Muell., Fragm. 2: 165 (1861). **Type:** [Queensland.] "Eutassa Ranges, Upper Brisbane" [River], December 1856, *F. Mueller* (lecto: MEL [MEL12231]), *fide* Symon (1981).

Erect, herbaceous resprouter, 0.2–0.5 m high. Juvenile stage absent. Adult branchlets grey or yellow; prickles 1–20 per decimetre, straight, acicular, 3–10 mm long, 6–15 times longer than wide; stellae very dense, 0.4–0.6 mm diameter, stalks 0–0.1 mm long; lateral rays 6–9, porrect; central ray absent or present, 0–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, entire; lamina 3–7 cm long, 1.1–3.2 cm wide, 2.2–3.2 times longer than broad, apex obtuse, base cuneate or obtuse, oblique part 0–3 mm long, obliqueness index 0–4 percent; petioles 0.4–2.2 cm long, 11–30% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–3, straight, acicular, 5–11 mm long, prickles absent or present on midvein only; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae density very sparse to moderate, 0.4–1.6 mm apart, 0.25–0.5 mm across, sessile; lateral rays 7 or 8, porrect; central ray 0.6–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent or present throughout, 0.1–0.5 mm apart. *Lower leaf surface* white or yellowish; prickles absent; stellae dense, *c.* 0.1 mm apart, 0.4–0.7 mm diameter, stalks 0–0.1 mm long; lateral rays 7–9, porrect; central ray 0.7–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed or supra-axillary, solitary or pseudo-racemose, common peduncle 3–11 mm long, rachis prickles absent; 1–3-flowered, weakly andromonoecious, flowers 5-merous; pedicels 5–20 mm long at anthesis, same thickness throughout, 0.8–1.3 mm thick at mid-point, prickles absent. Calyx tube 3–4.5 mm long, lobes deltate, 1–3.5 mm long; prickles absent at anthesis; stellae very dense, yellow, 0.25–0.4 mm across, stalks 0–0.1 mm long, lateral rays 7–10, central ray 0.7–1.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 8–15 mm long, deeply lobed, inner surface sparsely to densely stellate-hairy; anthers 5–7 mm long; ovary with Type 2 hairs only; functional style 8.5–12.5 mm long, erect, with stellate and Type 2 hairs, stellae 0.1–0.2 mm across, lateral rays *c.* 6, central ray *c.* 1 times as long as laterals. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 12–17 mm diameter, yellowish-green or pale green with dark green streaks, 4-locular; placenta in cross-section sessile, semi-circular, or stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.6–1.1 mm thick; pedicels 8–20 mm long in fruit, 0.8–1.3 mm thick at mid-point; seeds pale yellow, brown or black, 2.7–2.8 mm long.

***Specimens examined*: Queensland.** Burnett District: Kingaroy, Oct 1945, *Michael* 2955 (BRI); 'Kragra', 60 km N of Chinchilla, Aug 1986, *Hando* (BRI); Meandu Mine, Tarong Coal, adjacent to Dobby L.A., S.F.289, Feb 1994, *Forster* PIF14837 & *Smyrell* (AD, BRI); S.F.132 Allies Creek, *c.* 55 km S of Mundubbera, Nov 2002, *Bean* 19609 (BRI, NSW). Darling Downs District: Tara, Feb 1938, *White* 11181 (BRI); 'Parkhurst' via St George, Mar 1955, *Taylor* (BRI); 'Woodlands', 38 miles [61 km] N of Bungunya, Jun 1960, *Johnson* 1602 (BRI); 10 miles [16 km] N of Chinchilla, May 1966, *Redgen* 39 (AD, CANB); 'Dilbong', 35 miles [56 km] WSW of Tara, May 1968, *Clague* (BRI); Bullock Head road, 21 km S of Hannaford, Nov 1974, *Johnson* 2999 (BRI); 20.5 km SE of Moonie Hwy, SE of Westmar, Nov 1999, *Bean* 15861 (BRI); 'Karriba', SW of Milmerran, Nov 1999, *Bean* 15889 (BRI); cnr Schwennsen's Road & Riverglen road, N of Glenmorgan, Apr 2001, *Bean* 17665 & *Pedley* (BRI); off Lee's Road, 17 km W of Chinchilla, Feb 2003, *Bean* 19964 (BRI). Moreton District: Cooyar Range, S.F.289, *c.* 6 miles [10 km] W of Yarraman, Jul 1969, *Smith* 14736 (BRI, CANB); S.F.289, *c.* 5 km NW of Yarraman, Jan 2000, *Bean* 15991 (BRI, CANB, MEL, NSW).

***Distribution and habitat*:** *Solanum tetrathecum* is endemic to Queensland. Known from two separate areas: the main area is on the western Darling Downs from Allies Creek to Westmar; the other is around Kingaroy and Yarraman (**Map 22**). It usually inhabits heavy clays soils in Brigalow-Belah forest, but also grows on the margins of notophyll rainforest, in *Eucalyptus populnea* woodland or (rarely) on stony ironbark ridges.

***Phenology*:** Flowers are recorded for all months of the year; mature fruits from November to June.

***Notes*:** Closely related to *S. jucundum*. See notes under that species.

***Conservation status*:** Widespread. Not considered at risk.

67. Solanum cocosoides A.R.Bean **sp. nov.**
Frutex sparse aculeatus usque ad 1.5 m alto; folia adulta integra ovata sine aculeis; indumento stellato in paginis ambabus densissime praedita; stellae

ramulorum calycumque pedicellis usque ad 2 mm longae; florae pedicellis 1–4 mm longae sub anthesi; corollae facies interna dense stellato-pilosa; aculei calycis absentes; fructus maturi 4-loculares, virides usque flaveoli; semina brunnea usque atra. **Typus:** Queensland. LEICHHARDT DISTRICT: 21.1 km W of Blackwater, 16 September 1999, *A.R. Bean* 15403 (holo: BRI (1 sheet + spirit); iso: CANB, MEL, NSW, NY).

Erect, rhizomatous perennial shrub, 1–1.5 m high. Juvenile stage unknown. Adult branchlets terete or ridged, rusty or brown; prickles absent or present, 0–5 per decimetre, straight, broad-based, 4–10 mm long, 4–7 times longer than wide; stellae very dense, 0.5–1 mm diameter, stalks 0.2–2.2 mm long; lateral rays 7–11, ascending; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 4.5–8.5 cm long, 1.7–3.5 cm wide, 2.3–2.7 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–3 mm long, obliqueness index 0–6 percent; petioles 0.9–2.5 cm long, 17–35% length of lamina, prickles absent. *Upper leaf surface* grey; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae very dense, *c.* 0.05 mm apart, 0.4–0.8 mm across, stalks 0–0.1 mm long; lateral rays 7 or 8, porrect or ascending; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.5–0.8 mm diameter, stalks 0–0.3 mm long; lateral rays 7–9, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 15–33 mm long, rachis prickles absent; 2–5-flowered, weakly andromonoecious, flowers 5-merous; pedicels 1–4 mm long at anthesis, same thickness throughout or markedly thicker distally, *c.* 0.7 mm thick at mid-point, prickles absent. Calyx tube 3–4 mm long, lobes attenuate, 3–9 mm long; prickles absent at anthesis; stellae very dense, brown or rusty, 0.4–1 mm across, stalks 0–2 mm long, lateral rays 7 or 8, central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 12–20 mm long, rotate, inner surface densely stellate-hairy; anthers 5.5–6.5 mm long; ovary with Type 2 hairs only; functional style 9.5–11.5 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, globular, 14–20 mm diameter, yellowish-green or pale green with dark green streaks, 4-locular; placenta in cross-section stalked, circular to elliptical, or stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.7–2.5 mm thick; pedicels 4–8 mm long in fruit, 1–1.2 mm thick at mid-point; seeds brown to black, 2.6–3 mm long. **Fig. 38.**

***Specimens examined*: Queensland.** LEICHHARDT DISTRICT: 'Berrigurra', *c.* 17 km NW of Blackwater, Aug 1984, *Anderson* 3796 (BRI); 21.1 km W of Blackwater, Sep 1999, *Bean* 15401 (BRI, MEL); eastern edge of S.F.236, SW of Blackwater, Nov 2002, *Bean* 19522 (A, BRI, MEL, MO); 20.8 km W of Blackwater, Aug 1973, *Trapnell* 61 & *Williams* (BRI). MARANOA DISTRICT: Great Dividing Range, *c.* 80 km SW of Rolleston, 7 km SE of Mt Sugarloaf, Jun 1977, *Crisp* 3102 (AD, BRI, CANB).

***Distribution and habitat*:** *Solanum cocosoides* is endemic to Queensland. Known from a limited area of central Queensland, around Blackwater and near Rolleston (**Map 24**). It inhabits low ridges dominated by *Acacia catenulata* (Bendee) and *Eucalyptus exserta*, with grey loamy soil.

***Phenology*:** Flowers are recorded from June to November; fruits are recorded for August and November.

***Notes*:** *S. cocosoides* is morphologically close to *S. jucundum*, but differs by the branchlet stellae 0.5–1 mm across, with stalks 0.2–2.2 mm long (0.15–0.4 mm across and stalks 0–0.4 mm long for *S. jucundum*); petioles 17–35% length of lamina (10–20% for *S. jucundum*); corolla rotate (deeply lobed for *S. jucundum*); the larger stellae on both leaf surfaces; and the often larger fruits.

***Conservation status*:** *S. cocosoides* has been collected from 4 locations in central Queensland. It is not known from a conservation reserve. Land clearance is a minor threat. Applying the IUCN guidelines (IUCN. 2001), a category of "Near Threatened" is recommended.

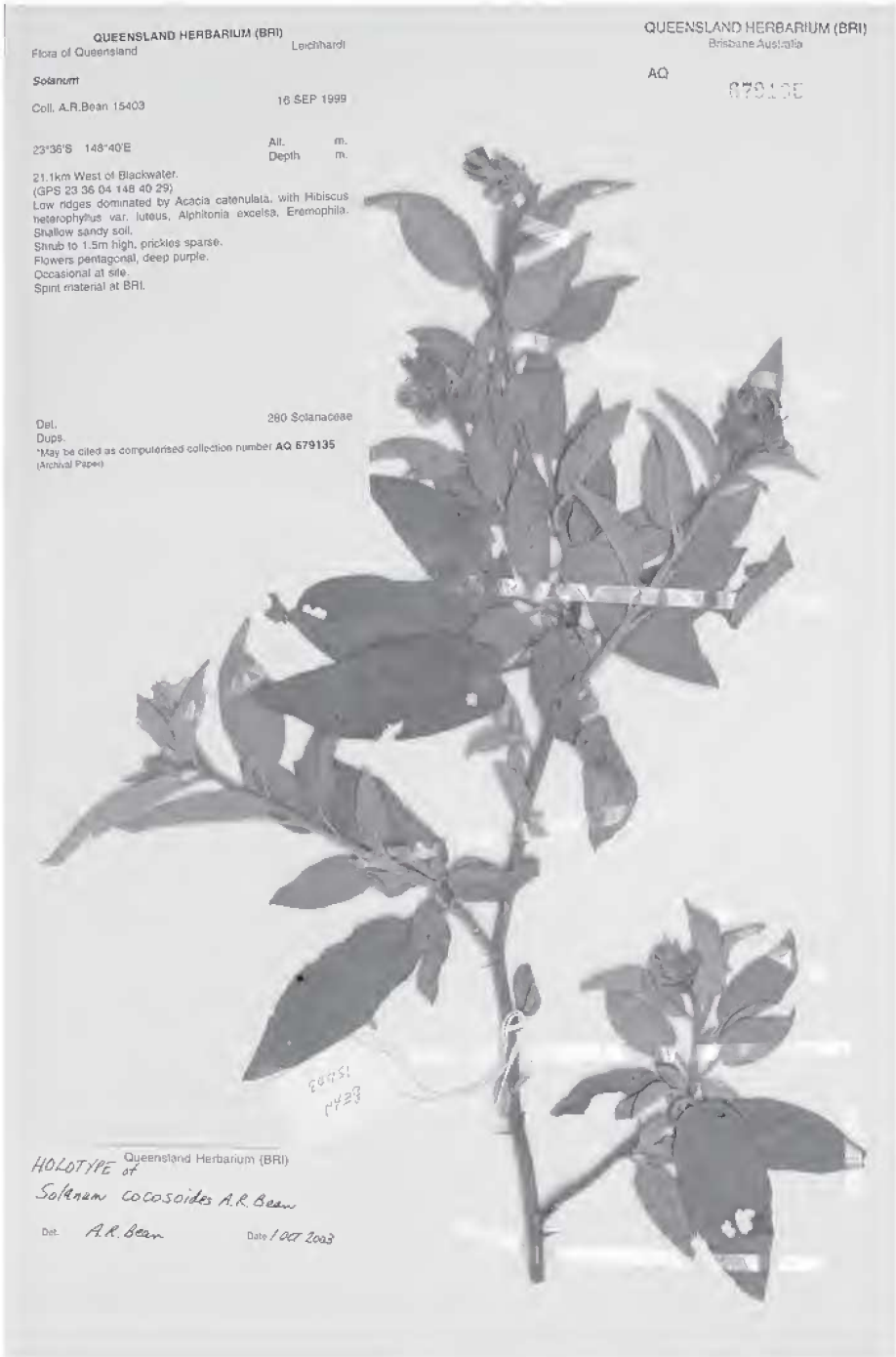

Fig. 38. Holotype of ***Solanum cocosoides***.

***Etymology*:** resembling *Cocos*, a genus of palms; an allusion to the very long-stalked stellae of the branchlets, which resemble miniature palm-trees.

68. Solanum jucundum A.R.Bean **sp. nov.** Frutex perennis usque ad 1.8 m altus; aculei ramuli sparsi vel nulli; cortex tenuis non-descriptus; folia adulta integra, lanceolata usque ovata, aculeis carentia; pagina superior folii stellis densis usque densissimis et pilis type-2 praesentes; corolla profunde lobata, pagina interna dense stellato-pilosa; calyx aculeis carens, lobis rostratis usque attenuatis; fructus maturi globulares, 14–16 mm diametro, flavo usque viridi. **Typus:** Queensland. Darling Downs District: Spinifex Road, 16 km N of Tara, 28 May 2000, *A.R. Bean* 16662 (holo: BRI (2 sheets + spirit); iso: MEL, NSW).

Solanum sp. (Monto A.R. Bean 8817) in Henderson (2002).

***Illustration*:** Symon (1981: 177), as *S. tetrathecum*.

Erect, rhizomatous perennial shrub, 0.7–1.8 m high. Juvenile stage unknown. Adult branchlets grey to yellow or rusty; prickles absent or present, 0–10 per decimetre, straight, acicular or broad-based, 6–10 mm long, 6–14 times longer than wide; stellae very dense, 0.15–0.4 mm diameter, stalks 0–0.4 mm long; lateral rays 8–11, porrect, ascending or multiradiate; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate or ovate, entire; lamina 2.5–8.5 cm long, 1.1–2.3 cm wide, 2.3–3.6 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–3.5 mm long, obliqueness index 0–4 percent; petioles 0.4–1.3 cm long, 10–20% length of lamina, prickles absent. *Upper leaf surface* grey-green or grey; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense to very dense, 0.05–0.1 mm apart, 0.2–0.4 mm across, sessile; lateral rays 6–8, porrect or ascending; central ray 0.7–1.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.5–1 mm apart. *Lower leaf surface* yellowish, or rusty; prickles absent; stellae very dense, 0.05–0.1 mm apart, 0.2–0.4 mm diameter, stalks 0–0.3 mm long; lateral rays 7–9, porrect; central ray 0.7–1.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 6–12 mm long, rachis prickles absent; 2–5-flowered, weakly andromonoecious, flowers 5-merous; pedicels 3–10 mm long at anthesis, markedly thicker distally, 1–2 mm thick at mid-point, prickles absent. Calyx tube 2.5–4.5 mm long, lobes attenuate or rostrate, 1–10 mm long; prickles absent at anthesis; stellae very dense, white to brown or rusty, 0.3–0.5 mm across, stalks 0.1–0.4 mm long, lateral rays 7–10, central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 10–14 mm long, deeply lobed, inner surface densely stellate-hairy; anthers 4.5–6.5 mm long; ovary with Type 2 hairs only, or with stellate and Type 2 hairs; functional style 8–10 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 14–16 mm diameter, yellowish-green or pale green with dark green streaks, 4-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.8–1.1 mm thick; pedicels 5–15 mm long in fruit, 0.8–2.5 mm thick at mid-point; seeds pale yellow or brown to black, 2.5–3.5 mm long. **Fig. 39.**

***Specimens examined*: Queensland.** Mitchell District: E of Jericho, Jul 1934, *Blake* 6814 (BRI). Leichhardt District: Injune–Rolleston road, *c.* 10 km from Injune on Rolleston road, Sep 1974, *Moriarty* 1554 (BRI, CANB); 'Anchor', 28 km SW of Duaringa, Mar 1982, *Anderson* 2969 (BRI); 'Morabinda', Taroom Shire, Jun 1993, *Schefe* CS7534 (BRI); Isla Gorge N.P., Jan 2000, *McDonald* KRM237 (BRI). Port Curtis District: S.F.69 Dawes Range, SE of Thangool, Mar 1996, *Bean* 10113 (BRI); 16 km NNE of Biloela, T.R.170, Mar 1996, *Thompson* BIL236 & *Price* (AD, BRI). Warrego District: 0.4 km W of Gee Gee Gap, Mt Moffatt N.P., Dec 1997, *Bean* 12904 (BRI). Maranoa District: *c.* 10 miles [16 km] W of Mitchell, May 1949, *Everist* 3745 (BRI); Moonie Highway, 61.2 km E of St George, Aug 1961, *Phillips* 442 (BRI, CANB); 'Deemfern', 53 miles [85 km] SW of Roma, Feb 1962, Nancarrow (BRI); 'Windamore', *c.* 40 miles [64 km] ESE of St George, Feb 1967, *Pedley* 2187 (BRI); Chesterton Range, *c.* 54 km N from Mungallala, Sep 1993, *Purdie* 4414 (BRI, CANB); near Coomrith Road, *c.* 25 km SSW of Glenmorgan, Apr 2001, *Bean* 17664 & *Pedley* (BRI, MEL, NSW). Burnett District: Fontainea Scrub, S.F.172, Gurgeena Plateau, Mar 1994, *Forster* PIF15067 (AD, BRI, MEL); S.F.215, *c.* 20 km ESE of Monto, Aug 1995, *Bean* 8817 (BRI). Darling Downs

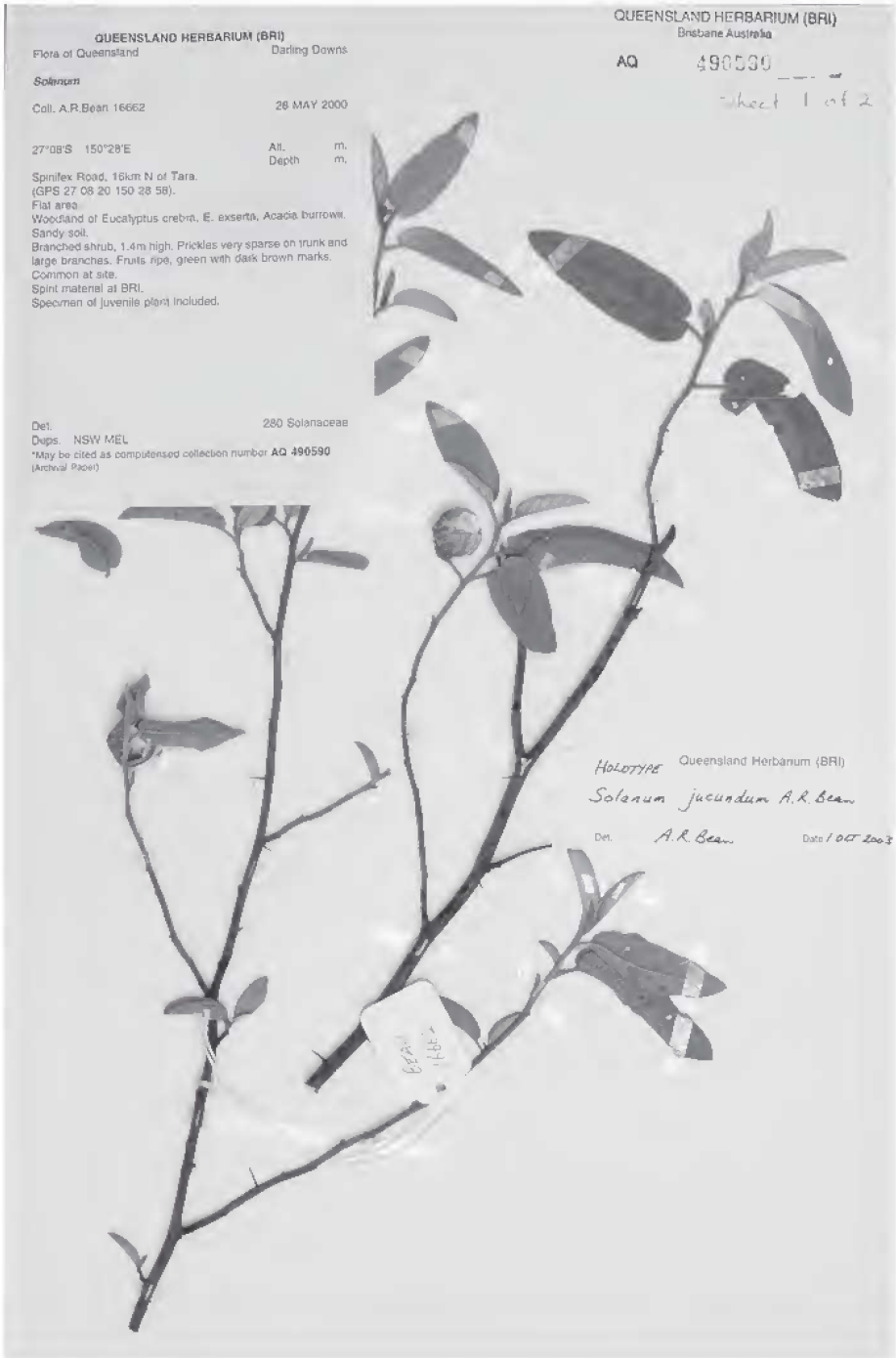

Fig. 39. Holotype of ***Solanum jucundum***.

District: NNW of Bungunya, Jul 1945, *Blake* 15860 (BRI); 'Cypress Downs', *c.* 15 miles [24 km] NW of Jackson, Apr 1951, *Everist s.n.* (BRI); 'Lapunyah', 42 miles [68 km] NW of Goondiwindi, Jul 1958, *Johnson* 511 (BRI, CANB); Coomrith area near Meandarra, Jul 1969, *Webb & Tracey* 8300 (AD, BRI, CANB, K, L); Chinchilla–Miles road, *c.* 10 km from Miles, Sep 1974, *Moriarty* 1553 (AD, BRI, CANB); Gurulmundi–Woleebee road, 11 km W of Gurulmundi, Oct 1975, *Williams* 75053 (BRI). **New South Wales.** North West Plains: Narrabri West, Jun 1907, *Boorman s.n.* (NSW). Central Western Slopes: Newell Highway, 35 miles [56 km] SW of Dubbo towards Peak Hill, Nov 1969, *Coveny* 2514 (BRI, NSW).

***Distribution and habitat*:** *Solanum jucundum* is widely distributed in Queensland south of the Tropic of Capricorn, especially in the western Darling Downs and Maranoa districts (**Map 25**). It also extends to central-western New South Wales, as far south as Peak Hill. It inhabits stony or sandy ridges in shrubby eucalypt woodland; the dominant species often include *Eucalyptus crebra, E. citriodora, E. melanophloia* or *Acacia catenulata*.

***Phenology*:** Flowers are recorded for every month of the year; mature fruits from September to June.

***Notes*:** *S. jucundum* is closely related to *S. tetrathecum*, but differs by the moderate to very dense indumentum of the upper leaf surface, perennial habit and greater height (up to 1.8 m high), the acute leaf apex, the rostrate to attenuate calyx lobes, the calyx stellae with stalks 0.1–0.4 mm long (0–0.1 mm for *S. tetrathecum*) and the style bearing Type 2 hairs only (Type 2 hairs and stellate hairs for *S. tetrathecum*). The distributions of *S. jucundum* and *S. tetrathecum* overlap considerably, especially around Glenmorgan, Hannaford and Westmar, but they never grow together and there is no intergradation between them.

***Conservation status*:** Widespread. Not considered at risk.

***Etymology*:** From the Latin *jucundus*, pleasing or agreeable. Well developed plants have a dense canopy of leaves and provide a showy display of flowers.

69. Solanum centrale J.M.Black, Trans. & Proc. Roy. Soc. South Australia 58: 180 (1934). **Type:** Northern Territory. 'Macdonald Downs' Station, *anno* 1932, *J. Chalmers s.n.* (lecto: K), *fide* Symon (1981), photo seen.

Erect, herbaceous resprouter, 0.2–0.4 m high. Juvenile stage unknown. Adult stem prickles present. Adult branchlets yellow, rusty or brown; prickles absent or present, 0–2 per decimetre, straight, acicular, 4–7 mm long, 7–10 times longer than wide; stellae very dense, 0.5–0.6 mm diameter, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire; lamina 2.8–8.5 cm long, 1.1–4.2 cm wide, 2–2.5 times longer than broad, apex obtuse or acute, base cuneate to cordate, oblique part 0–1.5 mm long, obliqueness index 0–4 percent; petioles 0.8–2.6 cm long, 17–40% length of lamina, prickles absent. *Upper leaf surface* grey-green or grey; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense to very dense, 0.05–0.2 mm apart, 0.5–0.7 mm across, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.7–1.1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white, yellowish or rusty; prickles absent; stellae very dense, 0.05–0.1 mm apart, 0.5–0.8 mm diameter, stalks 0.1–0.3 mm long; lateral rays 6–8, porrect; central ray 0.7–1.1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 4–23 mm long, rachis prickles absent; 1–4-flowered, flowers 5-merous; pedicels 5–7 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.9–1.3 mm thick at mid-point, prickles absent. Calyx tube *c.* 4 mm long, lobes rostrate, 3–4 mm long; prickles absent at anthesis; stellae very dense, brown or rusty, 0.4–0.5 mm across, stalks 0–0.2 mm long, lateral rays 7 or 8, central ray 0.7–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 10–13 mm long, shallowly or deeply lobed, inner surface sparsely to densely stellate-hairy; anthers 4.3–6.2 mm long; ovary glabrous; functional style *c.* 9 mm long, erect, glabrous. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular; pedicels *c.* 15 mm long in fruit, *c.* 1 mm thick at mid-point.

Specimens examined: **Queensland.** MITCHELL DISTRICT: Idalia N.P., WSW of Blackall, along Emmet Pocket road, Sep 1992, *Bennie s.n.* (BRI). WARREGO DISTRICT: Idalia N.P., Round Hole, Mar 1996, *Forster* PIF18891 & *Ryan* (BRI); Chesterton Range N.P., south-west corner, Jul 2001, *Dollery* 266 (BRI).

Distribution and habitat: *Solanum centrale* is of restricted occurrence in Queensland, known only from Idalia and Chesterton Range National Parks (**Map 24**). It is widespread in the southern part of Northern Territory and adjacent areas of South Australia and Western Australia. The habitat for Queensland populations is recorded as "*Acacia aneura* woodland or tall shrubland on red sand".

***Phenology*:** Flowers are recorded for March, July and September; mature fruits not seen.

***Notes*:** *Solanum centrale* has not been recorded for Queensland before. The specimens cited above are a good match for specimens from the Northern Territory, including the type. However, the N.T. material tends to have leaves more rusty in colour, shorter prickles, and stellae with a somewhat shorter central ray. Further Queensland material, particularly of the fruits, is needed to confirm the identity. *S. centrale* is closely related to *S. jucundum*, but differs by its lower stature; the much larger stellae of the branchlets, upper and lower leaf surfaces; absence of Type 2 hairs from the upper leaf surface; and the glabrous ovary.

S. centrale produces an edible fruit, which was highly prized by the Aboriginal tribes of central Australia (Latz 1995).

***Conservation status*:** Although very restricted in Queensland, this species is common and widespread in central Australia.

70. Solanum cinereum R.Br., Prodr. 446 (1810). **Type:** New South Wales: "banks of the Grose" [River], "1804" [October–November 1803], *R. Brown* (holo: BM (Bennett No. 2678)).

***Illustration*:** Cunningham *et al.* (1981: 595); Symon (1981: 259).

Sprawling or erect, rhizomatous perennial shrub, 0.3–0.7 m high. Leaves (in outline) broadly ovate; lamina 5–9.5 cm long, 4–9 cm wide. Adult branchlets grey or mauve; prickles 15–60 per decimetre, straight, acicular, 3–10 mm long, 11–16 times longer than wide; stellae dense to very dense, 0.35–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 8–14, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, deeply lobed throughout; lobes 3–5 on each side, acute or obtuse, lobing index 2.7–5; lamina 5.5–12.5 cm long, 3.5–5.5 cm wide, 1.4–2.5 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–12 mm long, obliqueness index 0–12 percent; petioles 1.7–3.3 cm long, 20–50% length of lamina, prickles present. *Upper leaf surface* green; prickles 13–65, straight, acicular, 2–10 mm long, prickles present on midvein and lateral veins; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to sparse, 0.9–2.5 mm apart, 0.2–0.4 mm across, sessile; lateral rays 6–8, porrect; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 20–45, straight, acicular, present on midvein and lateral veins; stellae very dense, *c.* 0.05 mm apart, 0.4–0.7 mm diameter, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–18 mm long, rachis prickles present; 3–6-flowered, weakly andromonoecious, flowers 5-merous; pedicels 7–16 mm long at anthesis, same thickness throughout, 0.8–1 mm thick at mid-point, prickles present. Calyx tube 2.5–3.8 mm long, lobes attenuate, 2.5–4 mm long; prickles present at anthesis, 20–65 per flower, 1–7 mm long; stellae dense, transparent or purple, 0.4–0.5 mm across, sessile, lateral rays 7–11, central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 11–15 mm long, rotate, inner surface sparsely stellate-hairy; anthers 4–5.5 mm long; ovary glabrous; functional style 6–10 mm long, erect, with stellate hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 2–7 mm long. Mature fruits 1–4 per inflorescence, globular, 17–28 mm diameter, yellowish-green or pale green with dark green streaks, glabrous or with a few

scattered stellate hairs, 2-locular; mesocarp moist but not juicy; exocarp 2–4.5 mm thick; pedicels 15–27 mm long in fruit, 1.2–1.4 mm thick at mid-point; seeds brown to black, 2.9–3.7 mm long. *Narrawa Burr.*

***Specimens examined*: Queensland.** Darling Downs District: The Summit, Apr 1954, *Hall* (BRI); Glenlyon–Mingoola area, Apr 1957, *Taylor* (BRI); Severnlea, Stanthorpe district, May 1961, *Morwood* (BRI); Bendee near Stanthorpe, Mar 1973, *Newton* (BRI); Inglewood, Sep 1973, *O'Donohue* (BRI); 5.4 km E of 'Arcot', ENE of Texas, May 2000, *Bean* 16651 (BRI, MEL, NSW); S.F.444, Durikai, Herries Range, Nov 2001, *Forster* PIF27745 (BRI, MEL). **New South Wales.** North West Slopes: 60 km E of Bonshaw towards Tenterfield, Aug 1975, *Coveny* 6665 (BRI, NSW)

***Distribution and habitat*:** In Queensland, *Solanum cinereum* is confined to the Warwick–Texas–Stanthorpe area (**Map 25**), but it is widespread in New South Wales. It grows in shrubby eucalypt or *Eucalyptus-Callitris* woodland.

***Notes*:** for more information, see Bean (2001).

***Conservation status*:** Widespread. Not considered at risk.

71. Solanum nobile A.R.Bean, Telopea 9: 645 (2001). **Type:** New South Wales: Northern Tablelands: Gwydir Highway, Gibraltar Range National Park, 0.7 km east of watershed, 8 September 2000, *A.R. Bean* 16850 (holo: BRI; iso: AD, K, MEL, NSW).

Solanum sp. 5 in Ross (1986).

***Illustration*:** Bean (2001: 647); N. & H. Nicholson, Australian Rainforest Plants IV, p. 64 (1994), as *S.* sp. aff. *cinereum.*

Erect, rhizomatous perennial shrub, 1.5–4 m high. Leaves (in outline) ovate or broadly ovate, deeply lobed, with 2–4 pairs of lobes; lamina 9–24 cm long, 5.5–17 cm wide, with *c.* 60 prickles on upper surface. Adult branchlets white or grey; prickles 2–30 per decimetre, straight, acicular or broad-based, 3–9 mm long, 6–10 times longer than wide; stellae dense, 0.2–0.3 mm diameter, sessile; lateral rays 6–7, porrect; central ray absent or present, 0–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, shallowly to deeply lobed throughout; lobes 2–4 on each side, acute, lobing index 1.7–4; lamina 7–14 cm long, 3–5 cm wide, 1.4–2.7 times longer than broad, apex acute, base obtuse or cordate, oblique part 1–8 mm long, obliqueness index 1–6 percent; petioles 1.3–3.5 cm long, 17–26% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 0–10, straight, acicular, 4–10 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae sparse, 0.4–0.5 mm apart, 0.15–0.25 mm across, sessile; lateral rays 6–8, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–2, straight, acicular, absent or present on midvein only; stellae very dense, *c.* 0.05 mm apart, 0.35–0.45 mm diameter, sessile; lateral rays 6 or 7, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–6 mm long, rachis prickles absent or present; 4–9-flowered, weakly andromonoecious, flowers 5-merous; pedicels 10–17 mm long at anthesis, markedly thicker distally, 0.7–1.2 mm thick at mid-point, prickles absent or present. Calyx tube 3–6 mm long, lobes attenuate, 5–8 mm long; prickles absent or present at anthesis, 0–5 per flower, 2–5 mm long; stellae dense, transparent or purple, 0.4–0.7 mm across, stalks 0–0.3 mm long, lateral rays 6–8, central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 10–17 mm long, rotate, inner surface glabrous; anthers 4–5.5 mm long; ovary with Type 2 hairs only; functional style 9–10 mm long, erect, with Type 2 hairs only or with stellate and Type 2 hairs, lateral rays 7–9. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent or present, 4–7 mm long. Mature fruits 1–3 per inflorescence, globular, 18–24 mm diameter, pale green with dark green streaks, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.8–1 mm thick; pedicels 15–24 mm long in fruit, 1.2–1.6 mm thick at mid-point; seeds pale yellow, 2.5–2.8 mm long.

***Specimens examined*: Queensland.** Darling Downs District: Main Range, 24 km ENE of Killarney, Oct 1968,

Everist 8124 (BRI); The Heads, 36 km SSW of Boonah on road to Killarney, Aug 1972, *Henderson* 1335 & *Sharpe* (AD, BRI); The Head, E of Killarney, Sep 1982, *Bird* (BRI); 0.7 km W of Moss Gardens, E of Killarney, Sep 2002, *Bean* 19367 (AD, BRI, NSW). **New South Wales.** North Coast: on top of Tooloom Range, near Acacia Creek, Sep 1908, *Dunn* (BRI); at Rory's road T/O, Ewingar S.F., south of Tabulam, Feb 2001, *Bean* 17329 (BRI).

***Distribution and habitat*:** In Queensland, *Solanum nobile* is known only from the Killarney area, but several populations are known in New South Wales as far south as Bellingen River (**Map 27**). It grows in notophyll rainforest, or in tall wet sclerophyll forest dominated by *Eucalyptus saligna*.

***Notes*:** for more information, see Bean (2001).

***Conservation status*:** Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU B1ab(ii,iii)+2ab(ii,iii); C2a(i)).

72. Solanum limitare A.R.Bean, Telopea 9: 653 (2001). **Type:** Queensland. Moreton district: adjacent to Mt Binga S.F., 11 km SE of Cooyar, 21 February 2000, *A.R. Bean* 16080 (holo: BRI; iso: MEL, NSW).

***Illustration*:** Symon (1981: 147), as *S. elegans*; Bean (2001: 647).

Erect, herbaceous resprouter, 0.3–0.8 m high. Juvenile branchlets with 10–30 prickles per dm, 2–7 mm long; leaves (in outline) lanceolate or ovate, shallowly to deeply lobed, with 1–3 pairs of lobes; lamina 6.5–13 cm long, 3–8 cm wide, with 5–15 prickles on upper surface. Adult branchlets grey or rusty; prickles 1–6 per decimetre, straight, acicular, 3–7 mm long, 7–9 times longer than wide; stellae very dense, 0.25–0.4 mm diameter, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray absent or present, 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* narrow lanceolate or lanceolate, entire; lamina 7–10.5 cm long, 0.9–1.7 cm wide, 4.5–8.5 times longer than broad, apex acute, base obtuse, oblique part 1–3.5 mm long, obliqueness index 1–4 percent; petioles 0.7–2.2 cm long, 8–30% length of lamina, prickles absent or present. *Upper leaf surface* grey-green; prickles 0–7, straight, acicular, 1–6 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae absent or present; ordinary stellae sparse to moderate density, 0.2–0.6 mm apart, 0.3–0.5 mm across, sessile; lateral rays 6–8, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–6, straight, acicular, absent or present on midvein only; stellae very dense, *c.* 0.05 mm apart, 0.35–0.45 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–5 mm long, rachis prickles absent; 3–8-flowered, weakly andromonoecious, flowers 5-merous; pedicels 11–20 mm long at anthesis, same thickness throughout, 0.7–0.9 mm thick at mid-point, prickles absent. Calyx tube 2.5–4 mm long, lobes deltate or attenuate, 3–5 mm long; prickles absent or present at anthesis, 0–2 per flower, 1–4 mm long; stellae dense, transparent, 0.3–0.45 mm across, stalks 0–0.1 mm long, lateral rays 7 or 8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 9–15 mm long, rotate, inner surface sparsely stellate-hairy; anthers 3.5–5.5 mm long; ovary with stellate and Type 2 hairs; functional style 8–12 mm long, erect, with stellate hairs only, stellae 0.3–0.4 mm across, lateral rays 8–20, central ray 1–1.5 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, globular, 14–17 mm diameter, pale green with dark green streaks, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp *c.* 0.5 mm thick; pedicels 16–20 mm long in fruit, 1.3–1.6 mm thick at mid-point; seeds white or pale yellow, 2.7–2.9 mm long.

***Specimens examined*: Queensland.** Burnett District: Bunya Mtns, Oct 1919, *White s.n.* (BRI). Darling Downs District: Highfield, Main Range, Dec 1875, *Bancroft* (BRI); Bunya Mtns, between Ghinghion Lookout and Summerhill View, Oct 1989, *Bird* (BRI); Condamine Gorge, Paddys Knob, Lot 13, Parish of Emuvale, Mar 1993, *Sparshott* KM40 (BRI); Mt Mitchell walking track, Jan 2003, *Hines* (BRI). Moreton District: Mt Mistake, Jun 1887, *Simmonds* (BRI); Main Range, between Spring Bluff and Murphys Creek, Aug 1930, *White* 7017 (BRI); Ben Lomond Peak, Jan 1988, *Bird* (BRI); near Boonah border gate, Croftby road, Jan 1990, *Forster* 6210 (BRI); 3.6 km along Duck Creek road, near

O'Reillys Guest House, Mar 2001, *Bean* 17393 (BRI). **New South Wales.** North Coast: Tooloom, Nov 1949, *Webb* 2188 (BRI); E of Mt Boorabee, near Kyogle, Jan 1963, *Salasoo* 2583 (NSW); 20 metres S of border fence, 2 km W of Mt Lindesay, Jan 2001, *Bean* 17238 (BRI, NSW).

Distribution and habitat: *Solanum limitare* extends from the Bunya Mountains in Queensland to Kyogle in New South Wales (**Map 26**). It grows in grassy to somewhat shrubby eucalypt woodland, usually not far from a rainforest edge.

***Notes*:** for more information, see Bean (2001).

***Conservation status*:** Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU B1ab(ii,iii)+2ab(ii,iii); C2a(i)).

73. Solanum amblymerum Dunal in A.DC., *Prodr.* 13(1): 294 (1852); *S. violaceum* var. *amblymerum* (Dunal) Maiden & Betche, *Census N.S.W. Pl.* 181 (1916). **Type:** New South Wales: Macquarie River, October 1822, *A. Cunningham* 90 (holo: G-DC *n.v.*, microfiche 13/1: 294.692; iso: K, NSW).

Erect, rhizomatous perennial shrub, 0.8–1.8 m high. Juvenile branchlets with 15–25 prickles per dm, 5–9 mm long; leaves (in outline) lanceolate, shallowly to deeply lobed, with 1 or 2 pairs of lobes; lamina 7–10 cm long, 1.5–2.5 cm wide, with 3–5 prickles on upper surface. Adult branchlets grey; prickles 1–10 per decimetre, straight, acicular, 5–9 mm long, 7–10 times longer than wide; stellae very dense, 0.3–0.4 mm diameter, sessile; lateral rays 7–10, porrect; central ray absent or present, 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* linear or narrow lanceolate, entire or with obtuse basal lobes only; lamina 5–11 cm long, 0.5–1.3 cm wide, 6–13 times longer than broad, apex obtuse or acute, base cuneate, obtuse or hastate, oblique part 0–1.5 mm long, obliqueness index 0–2 percent; petioles 0.3–0.9 cm long, 5–15% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 1–7, straight, acicular, 4–10 mm long, prickles present on midvein only; stellate hairs distributed throughout; protostellae present; ordinary stellae very sparse to sparse, 0.4–0.7 mm apart, 0.1–0.2 mm across, sessile; lateral rays 7 or 8, porrect; central ray 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–5, straight, acicular, absent or present on midvein only; stellae very dense, *c.* 0.05 mm apart, 0.2–0.45 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 1–11 mm long, rachis prickles absent; 3–6-flowered, weakly andromonoecious, flowers 5-merous; pedicels 5–10 mm long at anthesis, same thickness throughout, 0.8–0.9 mm thick at mid-point, prickles absent. Calyx tube 1.5–2.5 mm long, lobes deltate or attenuate, 2.5–4.5 mm long; prickles absent at anthesis; stellae dense, transparent or purple, 0.25–0.4 mm across, stalks 0–0.1 mm long, lateral rays 7 or 8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 8–14 mm long, rotate, inner surface glabrous or sparsely stellate-hairy; anthers 4.5–6.5 mm long; ovary with Type 2 hairs only; functional style 8–11 mm long, erect, with stellate and Type 2 hairs, stellae 0.4–0.5 mm across, lateral rays 8–11, central ray *c.* 1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, oblate or globular, 11–16 mm diameter, pale green with dark green streaks, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 0.7–0.8 mm thick; pedicels 9–13 mm long in fruit, 0.9–1.4 mm thick at mid-point; seeds white or pale yellow, 2.3–3 mm long.

***Specimens examined*: Queensland.** Darling Downs District: Stanthorpe, Jul 1904, *Boorman* (BRI); Silverwood, Sep 1922, *White* 1765 (BRI); granite hill W of Glen Aplin, Nov 1946, *Everist* 1362 (BRI); 'Benandre', 23 miles [34 km] SE of Texas, Apr 1962, *Pedley* 985 (BRI); Thulimbah, 4 miles [6 km] N of Stanthorpe, Oct 1967, *Greeness* (BRI); 1.6 km W of Cottonvale, Oct 1975, *Williams* 75096 (BRI); S.F.595, near Mt Gammie North, Sep 1992, *Forster* 11723 (BRI); Sundown N.P. near Red Rock Gorge road to Severn R., Jan 1993, *Forster* PIF12677 (AD, BRI); Mt Janet road, Passchendaele S.F., NW of Stanthorpe, Oct 1997, *Bean* 12471 (BRI); 1 km S of Crystal Mt turnoff, N of Dalveen, Nov 1999, *McDonald* KRM94 (BRI). Moreton District: ridge SW of Mt Hennessy, Black Duck Ck, 'Glenrock', Mar 1997, *Grimshaw* PG2694 (AD, BRI). **New South Wales.** Northern Tablelands: Roberts Range, W of 'Donnybrook', via

Wallangarra, Feb 1990, *Bean* 1358 (BRI); 9.9 km S of Boonoo Boonoo River, Mt Lindesay Hwy, Jan 1992, *Wilson* 1321 (BRI, NSW); lookout 1 km S of Emmaville, Jan 2001, *Bean* 17293 (BRI, NSW).

***Distribution and habitat*:** In Queensland, *Solanum amblymerum* is known from the Granite Belt and adjacent areas (**Map 28**). It is also common on the north-western slopes of N.S.W. It grows in shubby eucalypt or *Eucalyptus-Callitris* woodland on sandy to loamy soils.

***Notes*:** for more information, see Bean (2001).

***Conservation status*:** Widespread. Not considered at risk.

74. Solanum galbinum A.R.Bean **sp. nov.** Frutex erectus sparse foliatus, in ramulis sparse aculeatus; folia adulta linearia, 3–6 mm lata, petiolis 2–3 mm longis (3–7% longitudinis laminae); protostellae a pagina superiore folii absentes; calycis aculei absentes; corolla profunde lobata, pagina interna sparse stellato-pilosa; fructus maturi 10–15 mm diametro, virides cum striis obscurioribus viridibus; placenta sessilis; semina 3.5–4 mm longa. **Typus:** Queensland. South Kennedy District: Mt Coolon–Collinsville road, 0.8 km W of Caves Creek, 20 January 1996, *I.G. Champion* 1310 & *A.B. Pollock* (holo: BRI).

Solanum sp. (Mt Coolon I.G. Champion+ 1310) in Henderson (2002).

Erect, rhizomatous perennial shrub, 0.5–1.5 m high. Juvenile stage unknown. Adult branchlets rusty or brown; prickles 10–40 per decimetre, straight, acicular, 3–8 mm long, 8–13 times longer than wide; stellae very dense, 0.35–0.5 mm diameter, sessile; lateral rays 7 or 8, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* linear, entire; lamina 4–7 cm long, 0.3–0.6 cm wide, 8.5–17 times longer than broad, apex obtuse or acute, base cuneate, oblique part 0–2 mm long, obliqueness index 0–3 percent; petioles 0.2–0.3 cm long, 3–7% length of lamina, prickles absent. *Upper leaf surface* green; prickles 0–6, straight, acicular, 1.5–7 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae absent; ordinary stellae sparse to moderate density, 0.15–0.4 mm apart, 0.2–0.3 mm across, sessile; lateral rays 7 or 8, porrect; central ray 0.7–1.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.4–0.5 mm diameter, stalks 0–0.15 mm long; lateral rays 7 or 8, porrect; central ray 0.4–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-umbellate or pseudo-racemose, common peduncle 0–4 mm long, rachis prickles absent; 4–9-flowered, weakly andromonoecious, flowers 5-merous; pedicels 4–6 mm long at anthesis, same thickness throughout, 0.4–0.6 mm thick at mid-point, prickles absent. Calyx tube 1–2 mm long, lobes deltate, 1.5–2.5 mm long; prickles absent at anthesis; stellae very dense, purple, brown or rusty, 0.25–0.35 mm across, stalks 0–0.1 mm long, lateral rays 8 or 9, central ray 0.6–1.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla white or mauve, 7–11 mm long, deeply lobed, inner surface sparsely stellate-hairy; anthers 4–5.5 mm long; ovary with stellate hairs only, or with Type 2 hairs only; functional style 8–9.5 mm long, erect, with Type 2 hairs only or with stellate and Type 2 hairs, stellae 0.3–0.4 mm across, lateral rays 5–7, central ray 0.5–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–4 per inflorescence, globular, 10–15 mm diameter, pale green with dark green streaks, 1-locular (septum absent or incomplete); placenta in cross-section sessile, semi-circular; mesocarp juicy or moist; exocarp 0.3–0.4 mm thick; pedicels 5–9 mm long in fruit, 0.5–0.9 mm thick at mid-point; seeds pale yellow, 3.5–4 mm long. **Fig. 7, 40.**

***Specimens examined*: Queensland.** Burke District: White Mountains N.P., NW of 'Warang', Apr 2000, *Wannan* 1713 & *Martindell* (BRI, CANB, NSW); 13 km NW of 'Warang' HS site, White Mountains N.P., Apr 2000, *Thomas* 1817 & *Thompson* (BRI). Cook District: Newcastle Range, Feb 1928, *Brass* 1781 (BRI, CANB). North Kennedy District: 5 miles [8 km] S of 'Wairuna', Jun 1967, *Morain* 12 (BRI); near Reeve's Lake, *c.* 25 km W of junction of Lolworth Ck and Burdekin River, Jul 1981, *Henderson* H2658 (AD, BRI); 'Valley of Lagoons', *c.* 10.5 km E of HS, Apr 1989, *Clarkson* 7929 & *Henderson* (BRI); 2.5 km W of Clermont turn-off

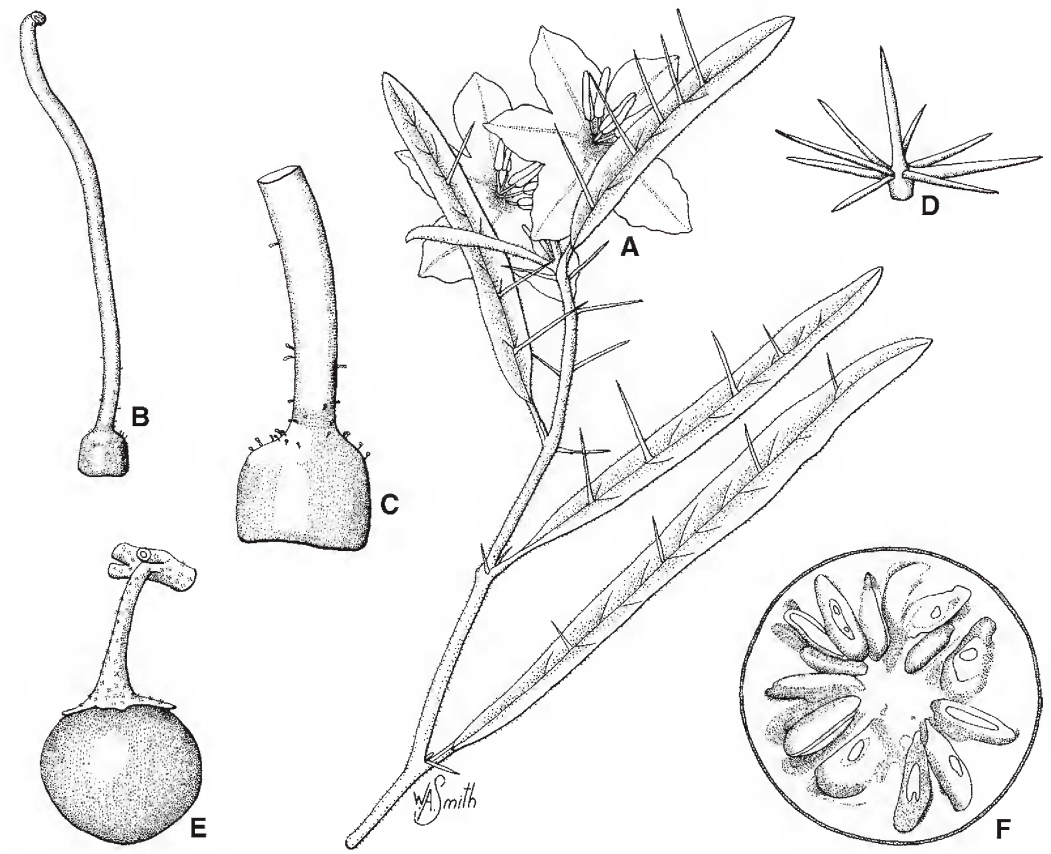

Fig. 40. ***Solanum galbinum***. A. flowering branchlet × 1.5. B. ovary and style × 6. C. ovary with Type 2 hairs × 16. D. stellate hair, upper leaf surface × 100. E. mature fruit and pedicel × 2. F. transverse section of fruit × 4. A, D, *Thompson* BUC455 & *Sharpe*; B–C, E–F, *Thomas* 1437 & *Thompson*.

on Flinders Hwy, Charters Towers, Sep 1990, *Wilson* 607 & *Rowe* (BRI, NSW); 46 km SW of Greenvale, towards 'Wando Vale', Jun 2000, *Cumming* 19647 (BRI). MITCHELL DISTRICT: 2.6 km S of road to 'Mundoo Bluff' HS, on road to 'Thirlestone', May 1991, *Neldner* 3349 & *Thompson* (BRI); 'Fortuna', Aramac, Aug 1998, *House* AZI1576 (BRI); Poison Valley road, White Mountains N.P., Apr 2000, *McDonald* KRM439 (BRI). SOUTH KENNEDY DISTRICT: on Great Dividing Range, *c.* 21 km NNW of 'Yarrowmere' HS, *c.* 97 km SSE of Pentland, Oct 1983, *Henderson* H2852 *et al.* (BRI, CANB); Peak Downs Highway, 17 km W of Moranbah turnoff, Mar 1989, *Champion* 437 (BRI); 20 km SE of 'Teamass' HS, Jun 1992, *Thompson* BUC455 & *Sharpe* (AD, BRI); 78 km from Collinsville on Mt Coolon road, Feb 1994, *Bean* 7360 & *Forster* (BRI); 14 km SW of 'Bowie', near Lake Buchanan, Feb 1994, *Bean* 7494 & *Forster* (BRI). LEICHHARDT DISTRICT: 12.5 km W of Middlemount on Dysart road, Jul 1998, *Thompson* 1094 & *Fox* (BRI).

***Distribution and habitat*:** *Solanum galbinum* is endemic to Queensland. Distributed from Newcastle Range near Einasleigh to Middlemount and Moranbah (**Map 27**). It grows on sandstone ridges and lateritised plateaux in open eucalypt woodland or *Acacia shirleyi* forest in shallow sandy soil.

***Phenology*:** Flowers are recorded from January to October; mature fruits from January to June and in October.

***Notes*:** *S. galbinum* seems closest to *S. amblymerum*, but differs from that species by the linear leaves 3–6 mm wide and petioles only 2–3 mm long; shorter calyx lobes at anthesis and shorter fruiting pedicels; the deeply-lobed corolla; the larger seeds and the stellae of the upper leaf surface having a longer central ray.

It is of very similar appearance to *S. ferocissimum*, but that species has smaller red fruits with longer pedicels, and the upper leaf surface is glabrous or almost so.

***Conservation status*:** Widespread. Not considered at risk.

***Etymology*:** From the Latin *galbinus* meaning yellowish. A reference to the yellow-green fruit. Both *S. parvifolium* and *S. ferocissimum*, with which this species has been confused, have bright red fruits.

Group 27D (S. esuriale group), here defined; related to Group 27 (*S. ellipticum* group) of Whalen (1984)

Upper leaf surface stellae with 8–18 lateral rays (100%); inner surface of corolla glabrous (100%); calyx not accrescent in fruit (100%); mature fruits green, yellowish-green or brown (100%); inflorescences andromonoecious, male flowers and bisexual flowers same size and prickliness (100%); inflorescence solitary or pseudo-racemose (93%); lower leaf surface indumentum dense to very dense (90%); adult leaves entire (86%); calyx without prickles (86%); Type 2 hairs absent from leaves (86%); upper leaf surface indumentum dense to very dense (70%); seeds brown to black (50%).

14 species endemic to Australia, 8 species indigenous to Queensland.

75. Solanum elachophyllum F.Muell., Fragm. 2: 164 (1861). **Type:** [Queensland. Leichhardt District:] between the Mackenzie and Dawson Rivers, November 1856, *F. Mueller* (lecto: K; isolecto: MEL [MEL 12234]), *fide* Symon (1981).

***Illustration*:** Symon (1981: 179).

Sprawling or erect, rhizomatous perennial shrub, 0.1–0.4 m high. Juvenile branchlets with *c.* 30 prickles per dm, 6–12 mm long; leaves (in outline) elliptical, entire; lamina 1.2–3.4 cm long, 0.6–1.5 cm wide, with 0–2 prickles on upper surface. Adult branchlets white or grey or brown; prickles 15–50 per decimetre, straight, acicular, 7–10 mm long, 11–14 times longer than wide; stellae very dense, 0.15–0.3 mm diameter, sessile; lateral rays 10–15, porrect; central ray absent or present, 0–0.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical, entire; lamina 0.5–1.5 cm long, 0.3–0.7 cm wide, 1.7–2.5 times longer than broad, apex obtuse, base cuneate, oblique part 0–0.3 mm long, obliqueness index 0–3 percent; petioles 0.1–0.3 cm long, 18–35% length of lamina, winged, prickles absent. *Upper leaf surface* green or grey-green; prickles 0–2, straight, acicular, 2–7 mm long, prickles absent or present on midvein only; stellate hairs confined to midrib, or distributed throughout; protostellae absent; ordinary stellae very sparse to dense, 0.3–0.6 mm apart, 0.15–0.25 mm across, sessile; lateral rays 8–10, porrect; central ray 0–0.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* greenish-white, white, or yellowish; prickles absent; stellae sparse to dense, 0.1–0.4 mm apart, 0.15–0.3 mm diameter, sessile; lateral rays 8–16, porrect; central ray 0–0.1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* leaf-opposed, solitary or pseudo-racemose, common peduncle 0–1 mm long, rachis prickles absent; 1 or 2-flowered, with all flowers bisexual and 5-merous; pedicels 3–15 mm long at anthesis, same thickness throughout, 0.5–0.8 mm thick at mid-point, prickles absent. Calyx tube 2–2.5 mm long, lobes deltate, 1–2.5 mm long; prickles absent at anthesis; stellae sparse to dense, white, 0.2–0.3 mm across, sessile, lateral rays 8–12, central ray 0–0.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 7–10 mm long, deeply lobed, inner surface glabrous; anthers 4–5 mm long; ovary with Type 2 hairs only; functional style 6–6.5 mm long, erect, glabrous or with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 per inflorescence, globular, 12–14 mm diameter, pale green with dark green streaks, 2-locular; placenta in cross-section sessile, semi-circular; mesocarp moist but not juicy; exocarp 1.2–1.8 mm thick; pedicels 6–15 mm long in fruit, 0.6–0.9 mm thick at mid-point; seeds pale yellow or brown to black, 2.9–3.7 mm long.

***Specimens examined*: Queensland.** LEICHHARDT DISTRICT: Blackwater, E of Emerald, Mar 1920, *Francis* (BRI); Emerald, undated, *Carey* (BRI); near 'Warwick' HS, Jul 1962, *Story & Yapp* 174 (BRI, CANB); 39 miles [63 km] S of Blackwater, Jul 1964, *Gittins* 862 (BRI); *c.* 4 miles [6 km] E of Moura, March 1967, *Henderson* H220 (BRI); 'Thomby', 20 miles [32 km] NW of Theodore, Sep 1969, *Johnson* 2874 (BRI); 0.5 km N of 'Bogandilla' HS, Broadsound Shire, Feb 1979, *Anderson* 769 (BRI); Brigalow Research Station, May 1981, *Dillewaard* 621 & *Johnson* (BRI); Taunton N.P., Oct 1995, *Melzer* RM688 & *Hendry* (BRI); 3 km E of Dingo, Feb 1998, *Fairfax* 267 & *Holman* (BRI); Brigalow Research Station, SW of Moura, Dec 2001, *Bean* 18254 (BRI); Crooked Creek Dam, Junee Tableland, Oct 2002, *Bean* 19378 (BRI); 'Nirvana', *c.* 15 km WNW of Banana, Apr 2003, *Bean* 20166 (BRI).

***Distribution and habitat*:** *Solanum elachophyllum* is endemic to Queensland. Confined to the central east of the state, from Middlemount to Theodore (**Map 26**). It grows on fertile cracking-clay soils in association with Brigalow (*Acacia harpophylla*), Belah (*Casuarina cristata*), Bonewood (*Macropteranthes leichhardtii*) or Dawson River Blackbutt (*Eucalyptus cambageana*).

***Phenology*:** Flowers recorded for February, March, July and September; mature fruits in March, May and July.

***Notes*:** *S. elachophyllum* can be distinguished from all other Queensland *Solanum* species by the very small leaves (5–11 × 3–7 mm). It is apparently related to *S. esuriale* and *S. sturtianum* by virtue of its stellate hair morphology.

It would probably make an interesting horticultural subject as a pot or tub plant.

***Conservation status*:** *S. elachophyllum* was first collected by Ferdinand Mueller in 1856 and has been collected in many locations since then. However, its habitat has been greatly reduced in recent decades and it is also threatened by weeds, particularly introduced pasture grasses. It is currently known from 4 locations, and it does not occur within a conservation reserve. Applying the IUCN guidelines (IUCN. 2001), a category of "Endangered" is recommended (EN A2ce; B2ab(iii,v); C1).

76. Solanum versicolor A.R.Bean **sp. nov.** Repullulator erectus herbaceus usque ad 0.3 m altus; cortex suberosus; ramuli sparse aculeati, aculeis 11–20plo longioribus quam latioribus; folia sine aculeis, pagina superior digitis ornata, pagina inferior albida; inflorescentia 1–3-flora, pedunculus communis absens; pedicelli floriferi 11–26 mm longi sub anthesi; calyx digitis praeditus sed aculeis carens; alibastra purpurascentia-albida et corolla albida; fructus maturi virides. **Typus:** Queensland. WARREGO DISTRICT: 27 km SE of Charleville, on road to Bollon, 28 January 2002, *A.R. Bean* 18456 (holo: BRI (1 sheet + spirit); iso: AD, MEL, NSW).

Erect, herbaceous resprouter, 0.15–0.3 m high. Juvenile stage absent. Bark on adult stems furrowed, corky. Adult branchlets yellow or brown; prickles 1–10 per decimetre, straight, acicular, 1–5 mm long, 13–20 times longer than wide; stellae dense, 0.5–0.8 mm diameter, stalks 0–0.1 mm long; lateral rays 7–9, porrect; central ray present, 0.2–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs sparse. *Adult leaves* lanceolate or elliptical, entire; lamina 3.5–6 cm long, 1.1–2.2 cm wide, 2.5–4 times longer than broad, apex obtuse, base cuneate, oblique part 0–1.5 mm long, obliqueness index 0–3 percent; petioles 0.6–1.4 cm long, 17–25% length of lamina, prickles absent. *Upper leaf surface* grey-green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense, 0.15–0.3 mm apart, 0.5–0.7 mm across, stalks 0–0.15 mm long; lateral rays 8–9, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs present, 0.1–0.3 mm apart, gland-tipped, 0.05–0.1 mm long; Type 2 hairs absent. *Lower leaf surface* white; prickles absent; stellae dense to very dense, 0.05–0.1 mm apart, 0.6–0.9 mm diameter, stalks 0.1–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.4–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-racemose, common peduncle absent, rachis prickles absent; 1–3-flowered, with all flowers bisexual and 5-merous; pedicels 11–26 mm long at anthesis, same thickness throughout, 0.5–0.6 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes attenuate, 3–4.5 mm long; prickles absent at anthesis; stellae moderate to dense, transparent, 0.5–0.7 mm

Fig. 41. Holotype of ***Solanum versicolor***.

across, stalks 0–0.1 mm long, lateral rays 6–8, central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs present; Type 2 hairs absent. Corolla white, 7–11 mm long, shallowly lobed; anthers 4–5 mm long; ovary with Type 2 hairs only; functional style 5–6.5 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, globular, 11–13 mm diameter, green, 2-locular; placenta in cross-section sessile, semi-circular; mesocarp moist but not juicy; exocarp 0.4–0.5 mm thick; pedicels 12–26 mm long in fruit, 0.6–0.9 mm thick at mid-point; seeds pale yellow, 2.7–3 mm long. **Fig. 41.**

***Additional specimen examined*: Queensland.** Warrego District: 44 km E of Charleville, towards Morven, Jan 2002, *Bean* 18507 (AD, BRI, NSW).

***Distribution and habitat*:** *Solanum versicolor* is endemic to Queensland. Known only from around Charleville in south-western Queensland (**Map 7**). It grows on lower hillslopes with *Acacia aneura* and *Eucalyptus populnea*, on deep red earths.

***Phenology*:** Poorly known. Flowers and fruits recorded in January.

***Notes*:** *S. versicolor* is related to *S. esuriale*, but differs by: the corky bark; the presence of finger hairs on both the upper leaf surface and the calyx; the absence of a common peduncle; pedicels 11–26 mm long at anthesis (5–9 mm long for *S. esuriale*); the white corolla; and the moderate to dense stellae on the calyx (very dense for *S. esuriale*).

***Conservation status*:** Data deficient.

***Etymology*:** From the Latin *versicolor* meaning different or varying colour, a reference to the green, sparsely hairy pedicels, which contrast strongly with the white, densely hairy rachises and branchlets.

77. Solanum esuriale Lindl. in Mitchell, Three Exped. Australia 2: 43 (1838); *S. esuriale* var. *esuriale* Domin, Biblioth. Bot. 89: 583 (1929). **Type:** New South Wales. [South Western Plains:] interior of New Holland [near Hillston], 19 April 1836, *T. Mitchell* (holo: CGE; iso: K).

Solanum esuriale var. *sublobatum* Domin, Biblioth. Bot. 89: 583 (1929). **Type:** Queensland. Mitchell District: near Longreach, March 1910, *K. Domin s.n.* (holo: PR, photo at BRI).

***Illustration*:** Cunningham *et al.* (1981: 590); Symon (1981: 173).

Sprawling or erect, herbaceous resprouter, 0.1–0.4 m high. Juvenile stage absent. Adult branchlets terete or ridged, grey or brown; prickles absent or present, 0–100 per decimetre, straight, acicular or broad-based, 1–4 mm long, 8–12 times longer than wide; stellae very dense, 0.7–0.9 mm diameter, stalks 0–0.2 mm long; lateral rays 8–12, porrect; central ray 0.3–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* linear to lanceolate, entire or shallowly lobed throughout; lobes 3–5 on each side, obtuse, lobing index 1–1.1; lamina 3–10 cm long, 0.7–1.4 cm wide, 3.8–14 times longer than broad, apex obtuse or acute, base cuneate, oblique part 0–2 mm long, obliqueness index 0–4 percent; petioles 0.4–1.4 cm long, 13–20% length of lamina, prickles absent or present. *Upper leaf surface* grey-green or grey; prickles absent; stellate hairs distributed throughout; protostellae absent or present; ordinary stellae density moderate to very dense, 0.05–0.4 mm apart, 0.4–0.7 mm across, sessile; lateral rays 6–12, porrect; central ray 0.5–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae dense to very dense, 0.05–0.4 mm apart, 0.5–0.8 mm diameter, stalks 0–0.1 mm long; lateral rays 8–14, porrect; central ray 0.3–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 14–36 mm long, rachis prickles absent; 3–6-flowered, with all flowers bisexual and 5-merous; pedicels 5–9 mm long at anthesis, same thickness throughout, 0.6–0.7 mm thick at mid-point, prickles absent. Calyx tube 2–3 mm long, lobes rostrate or attenuate, 2–3.5 mm long; prickles absent or present at anthesis, 0–3 per flower, 0.5–1 mm long; stellae very dense, white to rusty-brown, 0.5–0.7 mm across, stalks 0–0.1 mm long, lateral rays 6–9, central ray 0.3–1 times as long

as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 8–13 mm long, shallowly lobed, inner surface glabrous; anthers 3.5–5 mm long; ovary glabrous, or with stellate hairs only; functional style 6–7 mm long, erect, glabrous or with stellate hairs only, stellae 0.5–0.7 mm across, lateral rays 6–8, central ray 0.7–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent or present, 1–1.5 mm long. Mature fruits 1–4 per inflorescence, globular or ellipsoidal, 12–15 mm diameter, yellowish-green or green, glabrous or with a few scattered stellate hairs, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 1–1.3 mm thick; pedicels 7–20 mm long in fruit, 0.9–1.1 mm thick at mid-point; seeds pale yellow, 3–4.2 mm long. *Quena.*

***Selected specimens examined*: Queensland.** BURKE DISTRICT: Lake Mary, near Camooweal, May 1935, *Blake* 8882 (BRI); Julia Ck–Normanton road, 45 km N of Julia Creek, Jul 1985, *Williams* 85057 (BRI); 14 km NE of 'Eulolo' HS, 41 km NE of McKinlay, Nov 1986, *Neldner* 2695 & *Nicolson* (BRI). NORTH KENNEDY DISTRICT: Suttors River, undated, *Bowman* (BRI, MEL); 20 km N of Charters Towers, Mar 1992, *Dorney* 295 (BRI). GREGORY NORTH DISTRICT: Eyre Creek, 8 km SE of Bedourie, Sep 1978, *Purdie* 1338 (BRI); Chartwage Bore, 'Headingley', May 1985, *Neldner* 1779 & *Stanley* (BRI). MITCHELL DISTRICT: 12 miles [19 km] S of Tambo on Ward road, Feb 1968, *Beasley* (BRI); *c.* 30 km S of Hughenden on Muttaburra road, Jun 1977, *McDonald* 2509 (BRI). SOUTH KENNEDY DISTRICT: 'Laglan' Station, *c.* 105 km WNW of Clermont, Mar 1958, *Smith* 10321 (BRI); 26.5 km NW of Belyando Crossing on Gregory Development road, Jun 1992, *Thompson* BUC619 & *Sharpe* (BRI). LEICHHARDT DISTRICT: 9 miles [14 km] WNW of Springsure, Oct 1964, *Adams* 1394 (BRI, CANB); 'Berrigurra', *c.* 19 km NW of Blackwater, Duaringa shire, Dec 1983, *Anderson* 3621 (BRI); 'Homevale' Station, Mar 1994, *Champion* 1029 *et al.* (BRI). GREGORY SOUTH DISTRICT: Old Canterbury Hotel, on Betoota–Windorah road, Mar 1990, *Sandercoe* 4096 (BRI); 21.8 km NW of Eromanga turnoff, on Quilpie–Windorah road, Aug 1990, *Prendergast* HDP293 (BRI). WARREGO DISTRICT: Oakwood Station, N of Charleville, Apr 1932, *Francis s.n.* (BRI); Eulo, Apr 1941, *White* 12016 (BRI). MARANOA DISTRICT: 'Tamanick', 80 km SE of Mitchell, Nov 1989, *Warrian* CMW396 (BRI); 44.7 km along road to 'Combo', S of Bollon, Jan 1998, *Bean* 13050 (BRI). DARLING DOWNS DISTRICT: 'Calala', 10 miles [16 km] E of Meandarra, Apr 1960, *Johnson* 1622 (BRI); 2 km NW of Dalby, Apr 1994, *Fensham* 1259 (BRI); Marnhull, SE of Jandowae, Dec 2001, *Bean* 18201 (BRI). **New South Wales.** NORTH WEST PLAINS: 10 km NNE of Ashley on Rosedale road, Mar 1987, *Dunn* 61 *et al.* (BRI, NSW); 0.4 km S of Gurley Ck, on Moree–Narrabri road, Jan 1996, *Bean* 9503 (BRI, NSW).

***Distribution and habitat*:** *Solanum esuriale* is widely distributed in Queensland, being absent only in coastal areas and the far north of the state (**Map 29**). It occurs in all mainland states. It inhabits heavy clay soils and occurs in several plant communities including grassland, open woodland of *Eucalyptus coolabah* or *E. populnea*, open forest of *Acacia harpophylla* or *A. cambagei*.

***Phenology*:** Flowers and fruits may be found at any time of the year.

***Notes*:** *S. esuriale* is often completely unarmed, but sometimes bears numerous short prickles on the stems, rarely extending to the calyx. These prickly forms appear to be randomly distributed and hence have no taxonomic significance. It is closely related to *S. elaeagnifolium* (see Notes under that species).

***Conservation status*:** Widespread. Not considered at risk.

78. *Solanum elaeagnifolium Cav., Icon. 3: 22, t. 243 (1795). **Type:** cultivated in Madrid (originating from America), undated, *A.J. Cavanilles s.n.* (iso: C, MA, P-JU), *n.v.*, *fide* D'Arcy (1974).

***Illustrations*:** Cunningham *et al.* (1981: 593); Symon (1981: 153).

Erect, herbaceous resprouter, 0.3–0.6 m high. Juvenile stage unknown. Adult branchlets terete or ridged, white or grey; prickles absent or present, 0–30 per decimetre, straight, acicular or broad-based, 0.5–1.5 mm long, 6–10 times longer than wide; stellae very dense, 0.4–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 15–18, porrect; central ray absent or present, 0–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate, entire or shallowly lobed throughout; lobes 3–6 on each side, obtuse, lobing index 1–1.1; lamina 3–6.5 cm long, 0.8–1.4 cm wide, 3.9–5.2 times longer than broad, apex acute, base cuneate, oblique part 0–3 mm long, obliqueness index 0–6 percent; petioles 0.4–1.3 cm long, 13–25% length of lamina, prickles absent or present. *Upper leaf surface* grey-green or grey; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense to very dense, 0.05–0.2 mm apart, 0.4–0.5 mm across, sessile; lateral rays 10–15, porrect; central ray 0–0.5 times as long as laterals, not

gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.3–0.6 mm diameter, stalks 0–0.2 mm long; lateral rays 13–16, porrect; central ray 0.2–0.6 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 6–21 mm long, rachis prickles absent; 4–8-flowered, with all flowers bisexual and 5-merous; pedicels 7–14 mm long at anthesis, same thickness throughout, 0.7–0.9 mm thick at mid-point, prickles absent or present. Calyx tube 3–4.5 mm long, lobes attenuate, 3–6 mm long; prickles absent or present at anthesis, 0–35 per flower, 1–2.5 mm long; stellae very dense, white, 0.4–0.5 mm across, stalks 0–0.1 mm long, lateral rays 13–20, central ray 0.1–1 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 12–14 mm long, shallowly or deeply lobed, inner surface glabrous; anthers 7–9 mm long; ovary with stellate hairs only; functional style 11–13 mm long, erect, glabrous or with stellate hairs only, stellae 0.6–0.7 mm across, lateral rays 11–14, central ray 0.4–1 times as long as laterals. *Fruiting calyx* with lobes more than half length of mature fruit, prickles absent or present, 1–2.5 mm long. Mature fruits 2–5 per inflorescence, globular, 13–15 mm diameter, yellowish-green, with a few scattered stellate hairs; mesocarp moist but not juicy; pedicels 16–27 mm long in fruit, 1.2–1.5 mm thick at mid-point; seeds brown to black, 2.9–3.5 mm long. *Silver-leaf Nightshade.*

***Specimens examined*: Queensland.** Burnett District: 1 mile [1.6 km] N of Dappil railway siding, 7 miles [11 km] N of Gayndah, Oct 1966, *Marlowe* (BRI); County of Bowen, near Gayndah, Oct 1973, *James* (BRI). Darling Downs District: Elbow Valley, Dec 1959, *Seton* (BRI); 6 miles [10 km] N of Oakey, May 1963, *Inglis* (BRI); 2 miles [3 km] NW of Jandowae, Jan 1966, *Colborn* (BRI); 10.5 miles [17 km] ENE of Dalby, Nov 1971, *Cook* (BRI); Parish of Daadine near Dalby, Oct 1973, *James* (BRI); near Jandowae, Oct 1973, *James* (BRI); between Oakey and Biddeston, Jan 1979, *Kay* (BRI); Oakey, 50–100 m along Bacon's Road, Jan 2000, *Menkins* DDP17 (BRI); Limevale, on Texas–Inglewood road, May 2002, *Halford* Q7531 & *Batianoff* (BRI). Moreton District: 3 miles [5 km] SW of Laidley, Feb 1965, *Noffke* (BRI); 3 km E of Laidley, Nov 1973, *James* 5 (BRI); Gatton, Dec 1977, *Olsen s.n.* (BRI); 5 miles [8 km] NNE of Laidley, Feb 1979, *Armstrong* (BRI); Pearsons Road, Kalbar, Mar 2002, *Pocknee s.n.* (BRI). **New South Wales**. Bonshaw, Dec 1976, *Sharp* (BRI).

***Distribution and habitat*:** *Solanum elaeagnifolium* is native to southern U.S.A., Mexico, Argentina and Paraguay. It is sporadically naturalised in south-eastern parts of Queensland (**Map 31**). It occurs commonly in New South Wales, Victoria and South Australia, and sporadically in south-western Western Australia. It is found on degraded sites, such as disused cultivation paddocks, improved pasture and roadsides. Soil type is apparently unimportant, and varies from sandy to clayey types.

***Phenology*:** Flowers have been recorded from October to February; mature fruits in February.

***Notes*:** *S. elaeagnifolium* is close to *S. esuriale*, but differs by the branchlet stellae 0.4–0.5 mm diameter (*vs.* 0.7–0.9 mm for *S. esuriale*) with 15–18 lateral rays (8–12 lateral rays for *S. esuriale*), prickles usually present on pedicels and calyx (absent for *S. esuriale*), calyx stellae with 13–20 lateral rays (*vs.* 6–9 for *S. esuriale*) and anthers 7–9 mm long (*vs.* 3.5–5 mm for *S. esuriale*).

It is remarkable that the American species *S. elaeagnifolium* is so similar to the Australian species *S. esuriale*, to the extent that microscopic examination is often necessary to determine them.

S. elaeagnifolium has been declared a noxious weed for the whole of New South Wales (Conn 1992), but does not appear to be a serious weed in Queensland.

79. Solanum ammophilum A.R.Bean **sp. nov.** Frutex erectus parvus; ramuli aculei sparsi, recti, ad basim lati; ramuli stellae radiis lateralibus 8–13; folia linearia usque anguste lanceolata, pilis type-2 in paginis ambabus; inflorescentia 1 vel 2-flora, floris constanter 4-meris; calycis aculei absentes; ovarium papillis albidis glandularibus praeditum; fructus maturi flavovirentes, biloculares. **Typus:** Queensland. Maranoa District: 73 km from Charleville towards Bollon, 28 January 2002, *A.R. Bean* 18423 (holo: BRI (1 sheet + spirit); iso: AD, CANB, DNA, MEL, MO, NSW, *distribuendi*).

Erect, herbaceous resprouter, 0.2–0.4 m high. Juvenile stage absent. Adult branchlets white, grey or yellow; prickles absent or present,

0–10 per decimetre, straight, broad-based, 1.5–5 mm long, 5–7 times longer than wide; stellae dense to very dense, 0.3–0.5 mm diameter, sessile; lateral rays 8–13, porrect; central ray absent or present, 0–0.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs dense. *Adult leaves* linear or narrow lanceolate, entire; lamina 2–7 cm long, 0.3–0.7 cm wide, 6–10 times longer than broad, apex obtuse, base cuneate, oblique part 0–1 mm long, obliqueness index 0–3 percent; petioles 0.3–0.8 cm long, 10–17% length of lamina, prickles absent. *Upper leaf surface* grey-green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense, 0.1–0.2 mm apart, 0.2–0.5 mm across, sessile; lateral rays 8–10, porrect; central ray 0–0.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.1–0.2 mm apart. *Lower leaf surface* white; prickles absent; stellae dense to very dense, 0.05–0.1 mm apart, 0.4–0.8 mm diameter, stalks 0–0.1 mm long; lateral rays 8–10, porrect; central ray 0–0.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.05–0.1 mm apart. *Inflorescence* leaf-opposed or supra-axillary, solitary or pseudo-racemose, common peduncle absent, rachis prickles absent; 1 or 2-flowered, with all flowers bisexual and 4-merous; pedicels 5–17 mm long at anthesis, same thickness throughout, 0.8–1.1 mm thick at mid-point, prickles absent. Calyx tube 2.5–4 mm long, lobes deltate, 2.5–6 mm long; prickles absent at anthesis; stellae very dense, white, 0.4–0.6 mm across, stalks 0–0.1 mm long, lateral rays 8–11, central ray 0.2–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–15 mm long, deeply lobed, inner surface glabrous; anthers 4.5–7.5 mm long; ovary with white glandular papillae; functional style 8–11.5 mm long, erect, with white glandular papillae. *Fruiting calyx* with lobes less than or more than half length of mature fruit, prickles absent. Mature fruits 1 or 2 per inflorescence, oblate or globular, *c.* 13 mm diameter, yellowish-green, 2-locular; placenta in cross-section sessile, elliptical; mesocarp moist but not juicy; exocarp 0.7–0.9 mm thick; pedicels 9–18 mm long in fruit, 0.8–1.1 mm thick at mid-point; seeds pale yellow, 2.8–3 mm long. **Fig. 42.**

***Specimens examined*: Queensland.** Warrego District: 'Gilruth Plains', E of Cunnamulla, May 1939, *Blake* 14062 (BRI); 'Glenbar', *c.* 42 [miles?] SE of Charleville, Apr 1948, *Everist* 3395 (BRI, CANB); 'Gilruth Plains', Apr 1963, *McKee* 10366 (BRI); 22 miles [35 km] E of Cunnamulla on road to Bollon, Sep 1963, *Phillips* 534 (BRI); Top Cane paddock, 'Gilruth Plains', Cunnamulla, Apr 1967, *Barker* 784 (CANB). Maranoa District: 'Dingwall', *c.* 90 miles [145 km] SSE of Charleville, Jul 1948, *Everist* 3483 (BRI); 'Calabah', 75 miles [121 km] SE of Charleville, Mar 1962, *Ebersohn* (BRI); *c.* 21 km W of Boatman road, ENE of Cunnamulla, Dec 1998, *Bean* 14485 (BRI, MEL); 73 km from Charleville towards Bollon, Jan 2002, *Bean* 18426 (AD, BRI, CANB); 70 km from Charleville towards Bollon, Jan 2002, *Bean* 18434 (BRI, MEL); 64 km from Charleville towards Bollon, Jan 2002, *Bean* 18440 (BRI). **New South Wales.** North West Plains: Bourke district, Jan 1951, *Darley* 15 (NSW); 'Widgee Downs', Weilmoringle, Jun 1967, *Jensen* B6 (NSW); 32 miles [52 km] N of Bourke on Mitchell Highway, Apr 1977, *Moore* 7502 (CANB); 'Lila Springs', *c.* 25 km SSE of Enngonia, Feb 1978, *Barker* 424 (NSW).

***Distribution and habitat*:** *Solanum ammophilum* is found in the Charleville and Cunnamulla districts of Queensland (**Map 27**), and near Bourke in New South Wales. It inhabits low open woodland with *Eucalyptus melanophloia*, and often with *Acacia aneura, Angophora melanoxylon, E. populnea, Triodia* sp. on yellow to red sandy soils, often adjacent to shrubland areas featuring *Grevillea juncifolia*.

***Phenology*:** Flowers are recorded from September to May; mature fruits from January to July.

***Notes*:** *S. ammophilum* is close to *S. coactiliferum*, but differs by the leaves 6–10 times longer than wide (4–6 times for *S. coactiliferum*); branchlet stellae with 8–13 lateral rays; leaf stellae with 8–10 lateral rays (*vs.* 7 or 8 lateral rays for *S. coactiliferum*); stellae stalks <0.1 mm long (*vs.* 0.1–0.2 mm long for *S. coactiliferum*); the corolla glabrous on the inner surface (stellate-hairy for *S. coactiliferum*), and the presence of Type 2 hairs on the lower leaf surface.

The glandular papillae on the ovary and lower half of style are unique among Queensland species. These papillae persist on the fruits, and give them a distinctly sticky texture.

***Conservation status*:** Moderately widespread. Not considered at risk.

***Etymology*:** from the Greek *ammo-* (of the

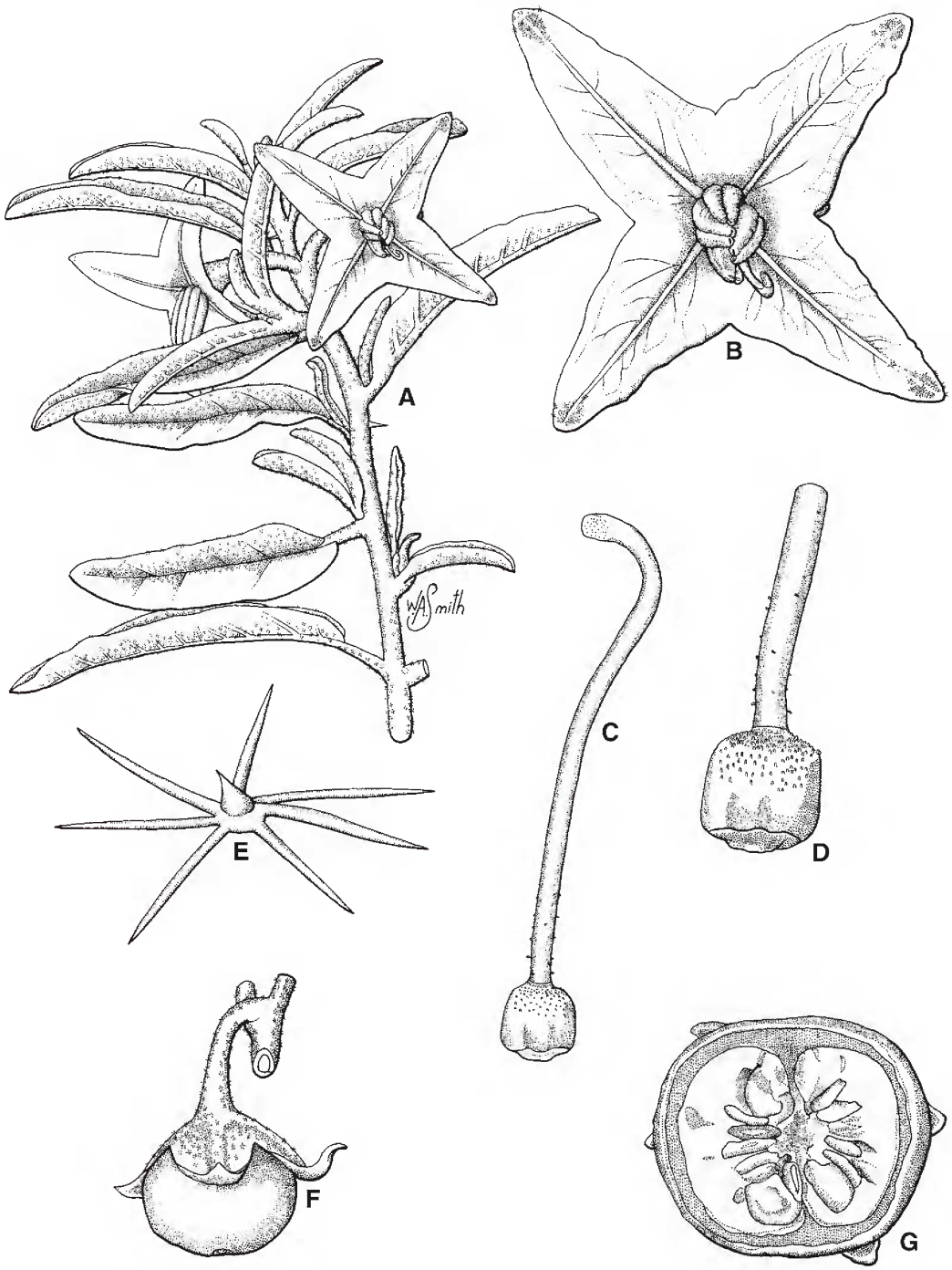

Fig. 42. ***Solanum ammophilum***. A. flowering branchlet × 1.5. B. flower × 3. C. ovary and style × 6. D. ovary, bearing glandular papillae × 12. E. stellate hair, upper leaf surface × 100. F. mature fruit, calyx and pedicel × 2. G. transverse section of fruit × 3. all from *Bean* 18423.

sand) and *-philus* (loving). This species occurs on soils that are much sandier than the prevalent soil type in the area.

80. Solanum sturtianum F.Muell., Trans. Philos. Soc. Victoria 1: 18–19 (1854); Hook. J. Bot. & Kew Gard. Misc. 8: 166 (1856). **Type:** interior of South Australia, 1844–46, *C. Sturt* No. 87 (lecto: MEL [MEL 11651]), here chosen.

***Illustrations*:** Cunningham *et al.* (1981: 589); Symon (1981: 205); P.S. Green, Curtis's Botanical Magazine 177: t. 543 (1969).

Erect, rhizomatous perennial shrub, 0.3–1.5 m high. Juvenile stage unknown. Adult branchlets white or grey; prickles absent or present, 0–10 per decimetre, straight, broad-based, 2–4 mm long, 5–7 times longer than wide; stellae very dense, 0.3–0.5 mm diameter, sessile; lateral rays 12–16, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate, entire; lamina 4.5–7 cm long, 1–1.8 cm wide, 3.8–5.7 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–3 mm long, obliqueness index 0–6 percent; petioles 0.6–1.3 cm long, 15–25% length of lamina, prickles absent or present. *Upper leaf surface* grey-green or grey; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae density moderate to dense, 0.1–0.2 mm apart, 0.15–0.3 mm across, sessile; lateral rays 13–15, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles absent; stellae very dense, 0.05–0.1 mm apart, 0.2–0.3 mm diameter, sessile; lateral rays 13–16, porrect; central ray absent; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 3–5 mm long, rachis prickles absent; 5–7-flowered, strongly or weakly andromonoecious, flowers 5-merous; pedicels 4–8 mm long at anthesis, same thickness throughout, 0.5–0.8 mm thick at mid-point, prickles absent. Calyx tube 1.5–3 mm long, lobes deltate, 1.5–2.5 mm long; prickles absent at anthesis; stellae very dense, yellow or white, 0.15–0.25 mm across, sessile, lateral rays 12–15, central ray absent; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 8–10 mm long, shallowly lobed, inner surface glabrous; anthers 4.5–5.5 mm long; ovary with stellate and Type 2 hairs; functional style 7–8 mm long, erect, with stellate and Type 2 hairs, stellae 0.15–0.2 mm across, lateral rays 6–13, central ray 1–1.5 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–3 per inflorescence, globular, 9–13 mm diameter, brown or yellow; mesocarp dry; pedicels 7–12 mm long in fruit, 0.8–1 mm thick at mid-point; seeds brown to black, 4–5.1 mm long. *Thargomindah nightshade.* **Fig. 8.**

***Specimens examined*: Queensland.** Gregory South District: South Galway, Jun 1949, *Everist* 4042 (BRI); *c.* 61 km W of Eromanga, Sep 1989, *Wilson* 437 & *Pickering* (AD, BRI, MO, NSW); 76.5 km from Thargomindah, Sep 1990, *Zalucki* (BRI); W of Eromanga, Aug 1997, *Anderson* 5070 (BRI). Warrego District: Thargomindah, Sep 1896, *Maiden* (BRI, NSW); 5 miles [8 km] S of Thargomindah, May 1910, *Little* (BRI); Norley Station [c. 25 km NNE of Thargomindah], May 1919, *Watts* (BRI); 'Thargomindah' Station, Oct 1950, *Grummit* (BRI); 19 km S of Thagomindah, Nov 1954, *Smith* 6055 (BRI); Thargomindah–Hungerford Stock Route, Feb 1965, *Carr* (BRI); *c.* 11 km SW of Thargomindah, on road to Hungerford, Sep 1973, *Henderson* H2060 & *Boyland* (AD, BRI, SP, US); Grey Range, *c.* 74 km from Thargomindah on road to Noccundra, Jul 1977, *Purdie* 735 (BRI); 12 km W of Thargomindah, May 1978, *Olsen* 760 & *Boyland* (BRI); 27.1 km W of Pinidary turnoff, on Thargomindah–Nockatunga road, Sep 1990, *Prendergast* HDP341 (BRI). **New South Wales.** North Far Western Plains: 78.1 km from 'Olive Downs' HS via Jump-up Loop road, ENE of Tibooburra, Sep 1989, *Coveny* 13583 *et al.* (AD, BRI, MO, NSW).

***Distribution and habitat*:** In Queensland, *Solanum sturtianum* is confined to the far south western parts, especially around Thargomindah (**Map 26**). It also occurs widely in arid parts of New South Wales, South Australia, Western Australia and Northern Territory. It grows on plains or stony ridges, in chenopod shrubland or *Acacia* open woodland. Associated species include *Acacia aneura, A. cambagei* and *Senna* spp.

***Phenology*:** Flowers are recorded from June to October; mature fruits from May to November, plus a single record from February.

***Notes*:** Brown (1849) stated that Captain Sturt "placed at my disposal the collection of plants formed in his recent expedition ....", and this explains the presence of a syntype at BM. Brown (*loc. cit.*) named numerous new species from this collection, but decided not to name several species that he considered were probably

new due to "the incomplete state of the specimens". Presumably *Solanum sturtianum* was one of these. Mueller named *S. sturtianum* in 1854.

Symon (1981) chose the specimen residing in BM as the lectotype of *S. sturtianum*, "in view of the quality of the specimen". Mueller never visited England, nor did he borrow specimens from BM. Since Mueller could never have seen the BM specimen, it cannot be considered in the choice of the lectotype. I therefore overturn Symon's lectotypification, which is contrary to Article 9.10 (Greuter *et al.* 2000), and choose instead MEL 11651 as lectotype.

***Conservation status*:** Widespread. Not considered at risk.

81. Solanum oligacanthum F.Muell., Trans. Philos. Soc. Victoria 1: 18–19 (1854). **Type:** Central Australia, 1844–46, *C. Sturt* (holo: MEL [MEL11991]).

***Illustrations*:** Cunningham *et al.* (1981: 591); Symon (1981: 207).

Erect, herbaceous resprouter or rhizomatous perennial shrub, 0.2–0.6 m high. Juvenile stage unknown. Adult branchlets white or grey; prickles absent or present, 0–30 per decimetre, straight, acicular, 0.5–13 mm long, 8–11 times longer than wide; stellae very dense, 0.2–0.4 mm diameter, stalks 0–0.1 mm long; lateral rays 13–15, porrect or multiradiate; central ray absent or present, 0–0.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* broadly ovate or orbicular, entire; lamina 1–2.5 cm long, 0.9–2.8 cm wide, 0.8–1.4 times longer than broad, apex obtuse, base obtuse or cordate, oblique part 0–1 mm long, obliqueness index 0–6 percent; petioles 0.1–0.3 cm long, 6–18% length of lamina, prickles absent. *Upper leaf surface* green to grey; prickles 0–2, straight, acicular, 1–7 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae absent; ordinary stellae density moderate to dense, 0.1–0.25 mm apart, 0.15–0.3 mm across, sessile; lateral rays 12–16, porrect or multiradiate; central ray 0.1–0.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white; prickles absent; stellae very dense, *c.* 0.05 mm apart, 0.2–0.35 mm diameter, sessile; lateral rays 9–18, porrect or multiradiate; central ray 0.3–0.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–4 mm long, rachis prickles absent or present; 4–6-flowered, flowers 5-merous; pedicels 2.5–7 mm long at anthesis, same thickness throughout, 0.5–0.8 mm thick at mid-point, prickles absent. Calyx tube 2–3 mm long, lobes deltate, 2.5–3.5 mm long; prickles absent at anthesis; stellae very dense, yellow or white, 0.3–0.4 mm across, stalks 0–0.2 mm long, lateral rays 10–16, central ray 0.7–1.3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 8–11 mm long, rotate, inner surface glabrous; anthers 3.5–5.5 mm long; ovary with Type 2 hairs only; functional style 7–8 mm long, erect, with Type 2 hairs only. *Fruiting calyx* with lobes less than half length of mature fruit, prickles absent. Mature fruits 1–6 per inflorescence, globular, 8–11 mm diameter, brown or yellow; mesocarp moist but not juicy; pedicels 3–8 mm long in fruit, 0.6–0.9 mm thick at mid-point; seeds brown to black, 3.6–5.3 mm long.

***Specimens examined*: Queensland.** Gregory South District: Cuppa Creek, 12 miles [19 km] W of Durrie, Jan 1937, *Everist & Smith* 82 (BRI); N of Betoota, Aug 1953, *Davidson* 433 (BRI); 'Tanbar' Station, W of Cooper's Creek, Feb 1968, *Lewis* (CANB); east of Simpson Desert, Jul–Aug 1969, *Cockburn* BPS3 (BRI); 8 km from Birdsville on new Betoota road, Sep 1977, *Purdie* 1139 (BRI); NW edge of Lake Yamma Yamma, Mar 1990, *Sandercoe* 4065 (BRI); 50 km W of Birdsville, on track to Poeppel Corner, Sep 1998, *Halford* Q3651 (BRI). Warrego District: 38 miles [61 km] S of Thargomindah, Feb 1968, *Lewis* (CANB). **New South Wales.** North Far Western Plains: Ford Grey Basin, *c.* 100 km NW of Tibooburra, May 1980, *Paijmans* 3456 (CANB); S edge of Lake Pinaroo near Fort Grey camping area, Sturt N.P., Sep 1989, *Coveny* 13475 *et al.* (AD, BRI, MO, NSW).

***Distribution and habitat*:** In Queensland, *Solanum oligacanthum* is confined to the extreme south-west of the state, near Birdsville (**Map 28**). It is also found in adjacent areas of New South Wales and South Australia. It grows in shrubland, on creek channels, claypans, lake margins and interdunal flats. Soils may be sandy or clayey.

***Phenology*:** Flowers are recorded for January, March, July, August and September; mature fruits in January and September.

***Notes*:** *S. oligacanthum* is immediately recognisable by its adult leaves. They are entire, orbicular or broadly ovate, and less than 25 mm long. *S. orbiculatum* from the Northern Territory and Western Australia also has orbicular or broadly ovate leaves, but they are larger. It also has longer petioles and larger fruits.

***Conservation status*:** Widespread. Not considered at risk.

Group 27F (S. echinatum group), here defined; related to Group 27 (*S. ellipticum* group) of Whalen (1984).

Adult leaves entire to shallowly-lobed (100%); fruiting calyx prickly, accrescent, covering the fruit completely (100%); habit prostrate or procumbent (100%); ovary glabrous (100%); mature fruits brown, oblate, 4-locular (100%); common peduncle >25 mm long (100%); corolla rotate, inner surface glabrous (100%); seeds brown to black (100%).

3 species endemic to Australia; 2 species indigenous to Queensland.

82. Solanum echinatum R.Br., Prodr. 447 (1810). **Type:** [Northern Territory.] North Island, Sir Edward Pellew Group, 16 December 1802, *R. Brown* (holo: BM; iso: MEL [MEL 12416]).

Solanum seitheae Symon, J. Adelaide Bot. Gard. 4: 201 (1981), **syn. nov. Type:** Queensland. Burke District: 116 km SW of Normanton, top of Donors Hills, 29 May 1967, *D.E. Symon* (holo: AD; iso: BRI, CANB, K, NSW).

***Illustrations*:** Symon (1981: 197); Symon (1981: 203), as *S. seitheae*.

Prostrate, rhizomatous perennial shrub, 0.1–0.3 m high. Juvenile stage unknown. Adult branchlets yellow, rusty or brown; prickles 200–660 per decimetre, straight, acicular, 1–8 mm long, 10–20 times longer than wide; stellae very dense, 0.6–0.8 mm diameter, stalks 0–0.8 mm long; lateral rays 7 or 8, porrect; central ray 0.8–1.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate, entire or shallowly lobed throughout; lobes 3 or 4 on each side, obtuse, lobing index 1–1.1; lamina 3.5–9.5 cm long, 2–5.5 cm wide, 1.7–2 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–3.5 mm long, obliqueness index 0–9 percent; petioles 1.1–5 cm long, 25–55% length of lamina, prickles present. *Upper leaf surface* grey-green; prickles 0–12, straight, acicular, 3–5 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae density moderate to dense, 0.1–0.4 mm apart, 0.4–0.8 mm across, stalks 0–0.2 mm long; lateral rays 7–9, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–9, straight, acicular, absent or present on midvein only or present on midvein and lateral veins; stellae dense to very dense, 0.05–0.1 mm apart, 0.6–0.9 mm diameter, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 25–38 mm long, rachis prickles present; 2–5-flowered, with all flowers bisexual and 5-merous; pedicels 3–9 mm long at anthesis, same thickness throughout or markedly thicker distally, 1–1.2 mm thick at mid-point, prickles present. Calyx tube 3–6 mm long, lobes rostrate or attenuate, 3–6 mm long; prickles present at anthesis, 60–300 per flower, 1–3 mm long; stellae very dense, yellow, brown or rusty, 0.7–0.9 mm across, stalks 0–1.1 mm long, lateral rays 7 or 8, central ray 1–1.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 9–14 mm long, rotate, inner surface glabrous; anthers 4.5–6 mm long; ovary glabrous; functional style 7–7.5 mm long, erect, glabrous. *Fruiting calyx* tube accrescent, enclosing most or all of mature fruit, prickles 1–8 mm long. Mature fruits 1–4 per inflorescence, oblate, 15–20 mm diameter, brown, 4-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 2–2.3 mm thick; pedicels 10–18 mm long in fruit, 1–1.8 mm thick at mid-point; seeds brown to black, 2–2.3 mm long. **Fig. 9.**

***Specimens examined*: Queensland.** BURKE DISTRICT: Leichhardt River, Jun 1935, *Blake* 9292 (BRI); 'Adels Grove', via Camooweal, Mar 1947, *De Lestang* 347 (BRI); 9 miles [14 km] W of 'Riversleigh' Station, Jun 1948, *Perry* 1440 (BRI, CANB); Calton Hills, 45 miles [72 km] N of Mt Isa, May 1963, *Gittins* 762 (BRI); 1 mile [1.6 km] E of 'Wernadinga', May 1967, *Symon* 4995 (AD, BRI, CANB, K); 17 miles [27 km] W of Nicholson River crossing, Jun 1967, *Symon* 5017 (AD, BRI); 14 km from Gunpowder on Quamby road, Oct 1972, *Althofer* 288 (BRI); 60 km E of Mt Isa on Mt Isa–Cloncurry road, Aug 1973, *Swan* 117 (BRI); *c.* 8 miles [13 km] NW of 'Riversleigh' station on road to 'Lawn Hill', Jul 1974, *Ollerenshaw* 1317 & *Kratzing* (BRI, CANB); Burketown, *c.* 24 km on Doomadgee Road, Jul 1974, *Ollerenshaw* 1354 & *Kratzing* (BRI, CANB); 120 km W of Mt Isa, Jul 1974, *Swan* 94 (BRI); 60 miles [97 km] NE of Mt Isa on road to Julius Dam, Aug 1974, *Swan* 126 (BRI, CANB); Dugald River Lode in vicinity of One Tree Hill, NW of Quamby, May 1976, *Simon* 3010 & *Farrell* (BRI); 24 km N of Mt Isa, Dec 1986, *Harris* 107 (BRI); W side of Lake Moondarra, 16 km NE of Mt Isa, Dec 1989, *Harris* 432 (BRI); 0.7 km NW of Magazine Hill, 10 km N of Silver Star Mine, Apr 1991, *Jones* 403A (BRI); Musselbrook Gorge, Lawn Hill N.P., Jul 1992, *McDonald* KM1117 & *Johnson* (BRI); main highway 109 km from Normanton, 88 km from Burke and Wills Roadhouse, Jul 1993, *Alcock* 11285 (AD, BRI); bank of Nicholson River, near Kingfisher Camp, Apr 1996, *Milson* JM1108 (BRI); Hilton shaft, Mt Isa shire, Jun 1996, *Barrs* SB28 (BRI); Lawn Hill, plateau above canoe portage area, Jul 1998, *Symon* 15791 (AD, BRI, L, NY).

***Distribution and habitat*:** *Solanum echinatum* is found in the northwestern corner of Queensland, as far south as Mt Isa (**Map 28**). It is also common in the Northern Territory, including the islands of the Gulf of Carpentaria. It grows on stony ridges or gullies in low eucalypt woodland, on a variety of substrates, including laterite.

***Phenology*:** Flowers are recorded from April to August, with a single record in December. Fruits are recorded from March to August.

***Notes*:** Closely related to *S. longissimum*, see Notes under that species. Both *S. echinatum* and *S. longissimum* have numerous conspicuously stalked stellae, especially on the branchlets and rachis, but also to a lesser degree on the upper and lower leaf surfaces (**Fig. 9**). The calyx prickles are extremely numerous, and there are always some smaller prickles with stellae mounted at the top (or, from the other perspective, long-stipitate stellae which are becoming prickles) (**Fig. 4**). By contrast, the stellae of *S. senticosum* (which grows in the same area) have stalks all about the same length with none conspicuously long. Also, none of the calyx prickles of *S. senticosum* have stellae mounted at the top. Hence *S. echinatum* and *S. longissimum* can be readily separated from *S. senticosum* in the absence of fruiting material.

The type of *S. seitheae* is indistinguishable from the type of *S. echinatum*. They both have fruits of about the same size, a dense rusty tomentum, some leaves with shallow lobes, and petioles less than half as long as the lamina.

There are additional unnamed taxa related to *S. echinatum* in the Northern Territory, and *S. wilkinsii* S.Moore probably deserves to be reinstated.

***Conservation status*:** Widespread. Not considered at risk.

83. Solanum longissimum A.R.Bean **sp. nov.**

Frutex prostratus vel procumbens; ramuli aculeis 3–80 per decimetrum; folia adulta ovata usque late ovata, integra, petiolis longitudine 67–116% laminae; inflorescentia pseudo-racemosa, pedunculo communi 35–67 mm longo; calycis aculei saepe non manifesti sub anthesi; corolla rotata; ovarium glabrum; calyx fructifer densissime aculeatus, accrescens, fructum includens; fructus maturi oblati, brunnei, pedicellis 20–30 mm longis. **Typus:** Queensland. COOK DISTRICT: Pannikan Springs area, 29 km W of Mungana, 26 January 1993, *A.R. Bean* 5617 & *P.I. Forster* (holo: BRI; iso: DNA).

Prostrate, rhizomatous perennial shrub, 0.15–0.3 m high. Juvenile stage unknown. Adult branchlets rusty or brown; prickles 3–80 per decimetre, straight, acicular or broad-based, 1–5 mm long, 6–10 times longer than wide; stellae dense, 0.6–1.1 mm diameter, stalks 0–0.6 mm long; lateral rays 7 or 8, porrect; central ray 1–1.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, entire; lamina 3–8 cm long, 1.7–4 cm wide, 1.6–2.1 times longer than broad, apex acute, base cuneate or obtuse, oblique part 0–5 mm long, obliqueness index 0–12 percent; petioles 2.4–5.5 cm long, 65–115% length of lamina, prickles absent. *Upper leaf surface* green or grey-green; prickles absent; stellate hairs distributed throughout; protostellae absent; ordinary stellae sparse to

dense, 0.25–0.5 mm apart, 0.6–0.7 mm across, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray 1–1.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* yellowish; prickles absent; stellae dense, 0.15–0.3 mm apart, 0.6–0.8 mm diameter, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 35–67 mm long, rachis prickles present; 3 or 4-flowered, flowers 5-merous; pedicels 4–6 mm long at anthesis, same thickness throughout or markedly thicker distally, 0.5–0.9 mm thick at mid-point, prickles present. Calyx tube 2.5–3.5 mm long, lobes deltate, 1–2.5 mm long; prickles absent or present at anthesis, zero or 20–100 per flower, 1–1.5 mm long; stellae very dense, yellow, 0.5–0.9 mm across, stalks 0–1.5 mm long, lateral rays 5–8, central ray 1–1.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 7–10 mm long, rotate, inner surface glabrous; anthers 3.5–4.5 mm long; ovary glabrous; functional style 6–6.5 mm long, erect, glabrous. *Fruiting calyx* tube accrescent, enclosing most or all of mature fruit, prickles 1–5 mm long. Mature fruits 1 or 2 per inflorescence, oblate, brown; mesocarp moist but not juicy; pedicels 20–30 mm long in fruit, 0.9–1.2 mm thick at mid-point. **Fig. 4, 43.**

***Specimens examined*: Northern Territory.** Nicholson River area, Tin Hole Creek, Jun 1974, *Maconochie* 2025 (BRI, CANB, DNA); 4 km W of 'Newcastle Waters', Feb 1980, *Latz* 8335 (BRI, DNA). **Queensland.** Burke District: 16 km (by road) W of Musselbrook Mining Camp on road to Border Waterhole, Apr 1995, *Thomas* MRS179 & *Johnson* (AD, BRI). Cook District: Gugu Yalungi Main Camp, Laura, Mar 1975, *Hyland* 8089 (BRI, CANB, QRS).

***Distribution and habitat*:** *Solanum longissimum* has a scattered distribution across northern Queensland (**Map 31**) and adjacent areas of the Northern Territory. It is recorded from sandstone ridges or lateritic rises supporting low eucalypt woodland with spinifex (*Triodia* spp.) in the understorey.

***Phenology*:** Flowers are recorded for January, February, March and June. Fruits are recorded for April.

***Notes*:** Related to *S. echinatum*, but differing by the sparsely prickly branchlets with 3–80 prickles per dm (*vs.* 200–660 for *S. echinatum*); branchlet prickles 6–10 times longer than wide (10–20 times for *S. echinatum*); the dense stellate hairs on the branchlets (*vs.* very dense for *S. echinatum*); the very long petioles, 65–115% of lamina length (*vs.* 25–55% for *S. echinatum*); and the deltate calyx lobes 1–2.5 mm long (*vs.* rostrate to attenuate, 3–6 mm long for *S. echinatum*).

***Conservation status*:** Data deficient.

***Etymology*:** From the Latin *longissimus* meaning 'longest', in reference to the exceptionally long petioles of this species, sometimes exceeding the lamina in length.

Group 28 (S. dioicum group) of Whalen (1984)

One bisexual flower per inflorescence (100%); male flowers smaller and less prickly than bisexual flowers (100%); mature fruits large, 23–30 mm diameter, green to yellowish-green (100%); fruiting calyx prickly, accrescent (100%); corolla rotate (100%); upper and lower leaf surfaces with dense to very dense indumentum (100%); seeds brown to black (100%); stigma of bisexual flower forked (50%).

18 species endemic to Australia; 2 species indigenous to Queensland.

84. Solanum chippendalei Symon, J. Adelaide Bot. Gard. 4: 272 (1981). **Type:** Western Australia. base of the Sir Frederick Range, 1 August 1962, *D.E. Symon* 2272 (holo: AD; iso: AD, CANB, PERTH).

Illustration: Symon (1981: 273)

Erect, rhizomatous perennial shrub, 0.4–1 m high. Juvenile stage unknown. Adult branchlets terete or ridged, white; prickles 35–400 per decimetre, straight, acicular, 1–9 mm long, 7–11 times longer than wide; stellae very dense, 0.8–1.3 mm diameter, stalks 0–1.2 mm long; lateral rays 7 or 8, porrect or ascending; central ray present, 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* lanceolate, elliptical or ovate, shallowly to deeply lobed throughout, rarely entire; lobes 2–4 on each side, obtuse, lobing index 1–5; lamina 4–9.5 cm long, 1.4–3.7 cm wide, 1.6–3.5 times longer than

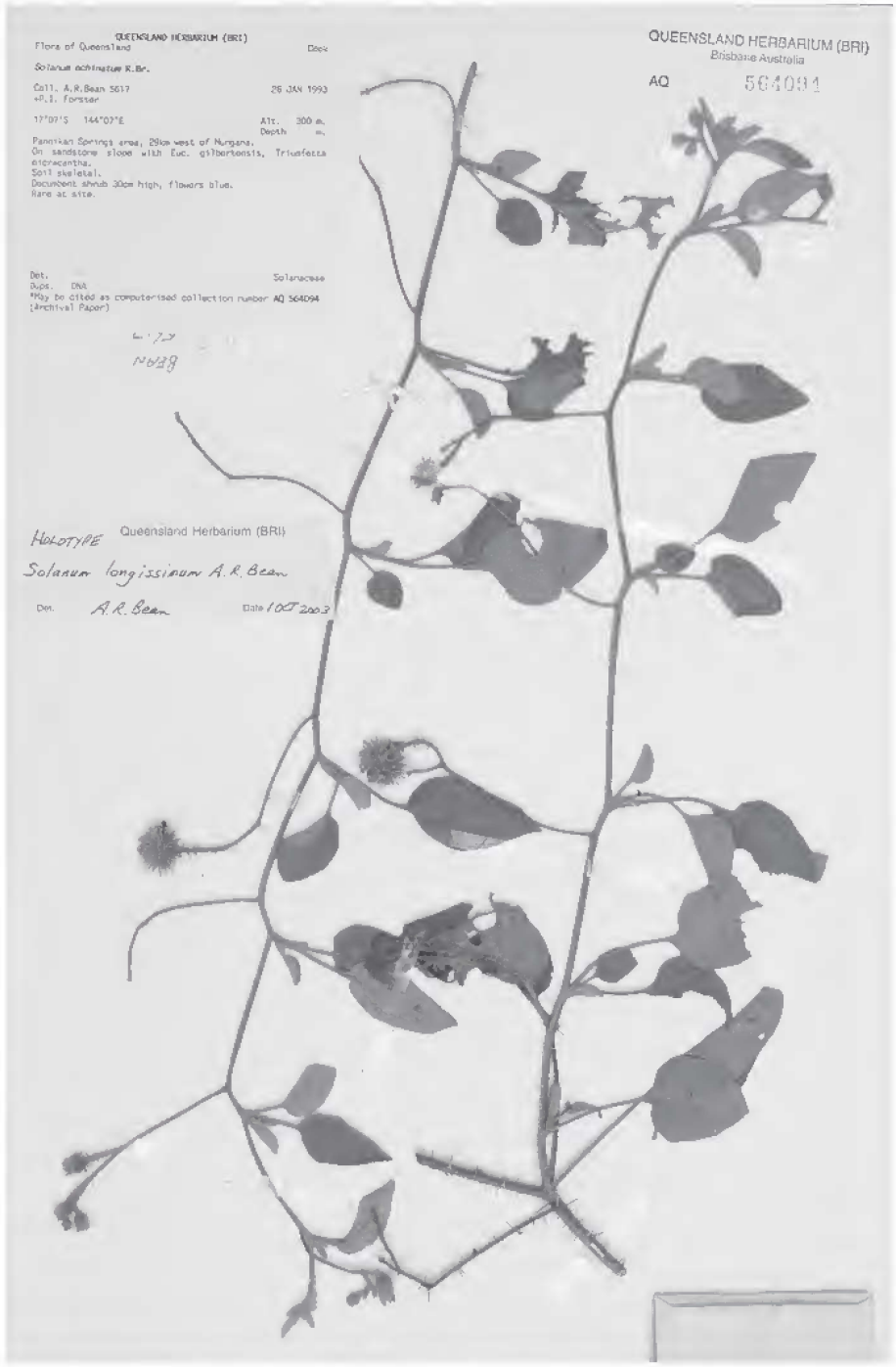

Fig. 43. Holotype of ***Solanum longissimum***.

broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–5 mm long, obliqueness index 0–8 percent; petioles 0.8–2.1 cm long, 20–30% length of lamina, prickles present. *Upper leaf surface* grey-green or grey; prickles 0–8, straight, acicular or broad-based, 3–10 mm long, prickles absent or present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense, 0.15–0.3 mm apart, 0.7–1 mm across, stalks 0–0.2 mm long; lateral rays 6–9, porrect or ascending; central ray 1–2.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 0–5, straight, acicular or broad-based, prickles absent or present on midvein only or present on midvein and lateral veins; stellae dense to very dense, 0.1–0.2 mm apart, 0.8–1.2 mm diameter, stalks 0–0.5 mm long; lateral rays 6–8, porrect; central ray 1–1.8 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 0–3 mm long, rachis prickles present; 7–11-flowered, strongly andromonoecious, flowers 5-merous. Flowers markedly dimorphic, with larger pricklier basal flower(s); pedicels 5–23 mm long at anthesis, same thickness throughout, 0.7–1.3 mm thick at mid-point, prickles absent or present. Calyx prickles on basal bisexual flowers 40–125, 2–6 mm long; prickles on distal male flowers 0–15, 1–3 mm long. Calyx tube 3–5 mm long, lobes attenuate, 6.5–11 mm long; stellae very dense, white, 0.7–0.9 mm across, stalks 0–1.5 mm long, lateral rays 7 or 8, central ray 1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 10–20 mm long, rotate, inner surface glabrous; anthers 4–6.5 mm long; ovary glabrous; functional style 10–12.5 mm long, erect, glabrous. *Fruiting calyx* with lobes more than half length of mature fruit, prickles 2–6 mm long. Mature fruits 1 per inflorescence, globular, 23–30 mm diameter, yellowish-green or green; mesocarp moist but not juicy; pedicels 23–48 mm long in fruit, 1.3–2.2 mm thick at mid-point; seeds brown to black, 3.3–3.6 mm long.

***Selected specimens examined*: Queensland.** Burke District: Leichhardt River, Apr 1935, *Blake* 8722 (BRI); 2 miles [3 km] N of Selwyn, May 1963, *Gittins* 716 (BRI); 1.6 km E of Mary Kathleen on road to Cloncurry, Apr 1974, *Hockings* 49 (BRI); 1.6 km S of Mt Isa on Urandangi road, Jul 1974, *Kratzing & Ollerenshaw* 1148 (BRI, CANB); 21.2 km N of Wills River on the Duchess–Mt Isa road, Sep 1990, *Wilson* 639 & *Rowe* (AD, BRI, NSW); *c.* 8 km along road to Lady Loretta Mine, turnoff *c.* 65 km from Mt Isa, Aug 1993, *Lally* 101 (BRI, CANB, DNA); 16 km (by road) W of Musselbrook Mining camp on road to Border Waterhole, 175 km N of Camooweal, Apr 1995, *Thomas* MRS174 & *Johnson* (BRI); 106 km N of Dajarra on Mt Isa road, May 1997, *Forster* PIF21159 & *Booth* (BRI, DNA); Barkly Highway, 52 km NW of Mt Isa, Jul 1998, *Symon* 15787 (AD, BRI, L); Spring Creek, NW of Mt Isa, Apr 2001, *McDonald* KRM827 (AD, BRI). Gregory North District: between Dajarra and Duchess, Jun 1978, *Althofer* 8350 (BRI); 15 km NE of 'Burnham', Jun 1979, *Purdie* 1551 (BRI); Boulia–Winton road, 112 km E of Middleton, Jul 1981, *Williams* 81188 (BRI).

***Distribution and habitat*:** In Queensland, *Solanum chippendalei* is confined to the north-west between Winton and Lawn Hill (**Map 30**). It is also widely distributed in semi-arid parts of Northern Territory and Western Australia. It grows commonly in low open eucalypt woodland with Spinifex (*Triodia* spp.) in the understorey, on a variety of substrates. It has also been recorded from alluvium in association with *Eucalyptus camaldulensis*.

***Phenology*:** Flowers are recorded between January and October; fruits between February and October.

Notes: In this species, the basal flower of each inflorescence is larger and pricklier than all other flowers, and only the basal flower develops into a fruit. It is closely allied to *S. melanospermum* F.Muell., a species of restricted occurrence in the Northern Territory.

***Conservation status*:** Widespread. Not considered at risk.

85. Solanum carduiforme F.Muell., Fragm. 2: 163 (1861). **Type:** [Queensland. Burke District:] Gulf of Carpentaria, Nicholson River, 21 August 1856, *F. Mueller* (lecto: K; isolecto: MEL), *fide* Symon (1981).

***Illustration*:** Symon (1981: 301)

Erect, rhizomatous perennial shrub, 0.5–1 m high. Juvenile stage unknown. Adult branchlets terete or ridged, white, grey or rusty; prickles 140–600 per decimetre, straight, acicular,

1–11 mm long, 10–14 times longer than wide; stellae very dense, 0.25–0.5 mm diameter, stalks 0–0.1 mm long; lateral rays 7–11, porrect or ascending; central ray present, 0.7–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical or ovate, deeply lobed throughout; lobes 3–5 on each side, obtuse, lobing index 2.5–12; lamina 5–7.5 cm long, 2–3 cm wide, 1.9–3 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 4–7 mm long, obliqueness index 6–10 percent; petioles 0.7–1.4 cm long, 15–25% length of lamina, prickles present. *Upper leaf surface* grey-green or grey; prickles 4–55, straight, acicular, 1–10 mm long, prickles present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae dense to very dense, 0.05–0.15 mm apart, 0.2–0.35 mm across, sessile; lateral rays 7 or 8, porrect; central ray 0.2–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* white or yellowish; prickles 6–70, straight, acicular, present on midvein only or present on midvein and lateral veins; stellae very dense, *c.* 0.05 mm apart, 0.25–0.4 mm diameter, stalks 0–0.1 mm long; lateral rays 7 or 8, porrect; central ray 0.2–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose (male) or solitary (female), common peduncle 14–18 mm long, rachis prickles present; 12–28-flowered (male), with all flowers unisexual (dioecious species), flowers 5-merous. Flowers markedly dimorphic, with larger pricklier basal flower(s); pedicels 2–6 mm long at anthesis, same thickness throughout, 0.4–0.8 mm thick at mid-point, prickles absent or present. Calyx prickles on basal female flower 300–600, 1–5 mm long; prickles on distal male flowers 18–30, 1–4 mm long. Calyx tube 2–4 mm long, lobes deltate, 2–3.5 mm long; stellae very dense, white, brown or rusty, 0.3–0.4 mm across, stalks 0–0.1 mm long, lateral rays 7 or 8, central ray 0.7–1.4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 11–14 mm long (male), rotate, inner surface densely stellate-hairy; anthers 4–4.5 mm long; ovary glabrous; functional style 9.5–12 mm long, erect, glabrous; stigma forked. *Fruiting calyx* tube accrescent, enclosing most or all of mature fruit, prickles 3–10 mm long. Mature fruits 1 per inflorescence, globular, *c.* 25 mm diameter; pedicels 3–5 mm long in fruit, 1.5–2 mm thick at mid-point.

***Specimens examined*: Queensland.** BURKE DISTRICT: Lawn Hill, Oct 1887, *Hann* (BRI); Lawn Hill Gorge, Aug 1979, *Farrell* 922 (AD, BRI, CANB, K, MO); Lawn Hill N.P., Jul 1985, *Williams* 85082 (BRI); Musselbrook Creek Gorge, 27.6 km by road NE of Musselbrook Mining Camp, Apr 1995, *Thomas* MRS614 & *Johnson* (AD, BRI); Amphitheatre, 40 km N of Musselbrook Mining Camp, May 1995, *Johnson* MRS787 & *Thomas* (BRI); 'Bowthorn', Jun 2001, *Fensham* 4591 (BRI). COOK DISTRICT: *c.* 50 km SW of Forsayth, *anno* 1998, *Hughes* (BRI); Cobbold Gorge, Apr 1999, *Wannan* 1187 (BRI, CANB, NSW).

***Distribution and habitat*:** In Queensland, *Solanum carduiforme* is known from the Lawn Hill National Park and surrounding area, and the Forsayth area (**Map 14**). Also known from the eastern Kimberley of Western Australia, but has not been recorded for the Northern Territory. It inhabits depressions or crevices on skeletal sandstone ridges and plateaux, in or adjacent to low eucalypt woodland.

***Phenology*:** Flowers are recorded from April to July and in October; mature fruits recorded in April and May.

***Notes*:** *S. carduiforme* is the only dioecious species indigenous to Queensland. The female plants have reduced inflorescences bearing only a single flower.

S. carduiforme is close to *S. chippendalei* but differs by the dioecious habit, the more-dissected leaves with a much "closer" tomentum, smaller fruits, and accrescent calyx.

***Conservation status*:** Currently listed as "Vulnerable" under the Queensland Nature Conservation Act, 1992.

Solanum carduiforme is restricted in its area of occupancy, but has been collected several times in recent years. It is conserved in Lawn Hill N.P. The only perceived threat to its continued existance is the small population size. Applying the IUCN guidelines (IUCN. 2001), a category of "Near Threatened" is recommended.

Group 29 (S. incanum group) of Whalen (1984).

Inflorescences with one (rarely two) basal bisexual flower(s) with very prickly calyx, and several male flowers with unarmed or sparsely prickly calyx (100%); calyx prickles present in fruit (100%); mature fruits 2-locular, 15–30 mm diameter, yellow or orange (100%); finger hairs absent (100%); branchlet prickles broad-based (67%); adult leaves lobed (67%).

4 species in Australia, 3 species occurring in Queensland (2 naturalised and 1 native).

This is not a very cohesive group, as *S. stupefactum* is rather different in several respects.

86. Solanum stupefactum Symon, Austrobaileya 4: 435 (1995). **Type:** Queensland. MORETON DISTRICT: northern outskirts of Yarraman township, 3 April 1975, *R.J. Henderson* 2286 (holo: BRI; iso: CANB).

Solanum sp. 4 in Ross (1986)

***Illustration*:** Symon (1995: 436)

Erect, rhizomatous perennial shrub, 1–2 m high. Juvenile stage unknown. Adult branchlets white or brown; prickles 25–45 per decimetre, straight, acicular, 4–10 mm long, 9–15 times longer than wide; stellae dense, 0.5–1.2 mm diameter, stalks 0–2 mm long; lateral rays 6–8, porrect; central ray 2–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs dense. *Adult leaves* ovate, entire; lamina 4.5–9 cm long, 2.2–4.3 cm wide, 1.7–2.4 times longer than broad, apex obtuse or acute, base cuneate to cordate, oblique part 0–3 mm long, obliqueness index 0–4 percent; petioles 0.8–2 cm long, 17–25% length of lamina, prickles absent or present. *Upper leaf surface* green; prickles 0–2, straight, acicular, 5–9 mm long, prickles absent or present on midvein only; stellate hairs distributed throughout; protostellae present; ordinary stellae density moderate to dense, 0.3–0.5 mm apart, 0.5–0.9 mm across, stalks 0–0.3 mm long; lateral rays 6–9, porrect; central ray 2–4 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.3–0.8 mm apart. *Lower leaf surface* green; prickles absent; stellae dense, 0.1–0.2 mm apart, 0.5–0.9 mm diameter, stalks 0–1.1 mm long; lateral rays 7 or 8, porrect; central ray 2–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 7–21 mm long, rachis prickles present; 5–9-flowered, strongly andromonoecious, flowers 5-merous. Flowers markedly dimorphic, with larger pricklier basal flower(s); pedicels 10–25 mm long at anthesis, same thickness throughout, 0.5–0.7 mm thick at mid-point, prickles present. Calyx prickles on basal bisexual flowers 10–18, 1–7 mm long; prickles absent from distal male flowers. Calyx tube 3–5 mm long, lobes deltate, 6–8 mm long; stellae very dense, white to brown or rusty, 0.6–1.5 mm across, stalks 0.3–1.7 mm long, lateral rays 5–7, central ray 1–3 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla mauve or purple, 9–20 mm long, rotate or shallowly lobed, inner surface glabrous; anthers 4.5–7 mm long; ovary with stellate hairs only; functional style 7–11 mm long, erect, with stellate hairs only, stellae 0.5–0.9 mm across, central ray 2–4 times as long as laterals; stigma forked, or lobed. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 1–7 mm long. Mature fruits 1 per inflorescence, globular or ellipsoidal, 18–26 mm diameter, orange, conspicuously tomentose, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 2.2–3 mm thick; pedicels 15–25 mm long in fruit, 1.1–1.6 mm thick at mid-point; seeds pale yellow, brown or black, 2.8–3.5 mm long.

***Specimens examined*: Queensland.** DARLING DOWNS DISTRICT: Gowrie Mountain, undated, *Bailey* (BRI). MORETON DISTRICT: Araucaria Ranges, Dec 1856, *Mueller s.n.* (MEL [MEL12199]); Rockmount, 25 km S of Helidon, Aug 1986, *Bird* (BRI); Paradise Range, Mt Sylvia via Gatton, Sep 1986, *Williams* 86016 (BRI); S.F.289, *c.* 5 km NW of Yarraman, Jan 2000, *Bean* 15992 (BRI, MEL, NSW); adjacent to Mt Binga S.F., 11 km SE of Cooyar, Feb 2000, *Bean* 16060 (AD, BRI, CANB, MEL, NSW).

***Distribution and habitat*:** *Solanum stupefactum* is endemic to Queensland, and only in the south-east, from Yarraman to Mt Sylvia (**Map 30**). It grows on the edge of notophyll rainforest or in sclerophyll forest close to rainforest.

***Phenology*:** Flowers recorded from January to September; mature fruits recorded for February and March.

***Notes*:** A distinctive species without close relatives in Australia, but with some affinity to the African species *S. incanum*. It differs from *S. incanum* by the entire adult leaves and bright orange fruits with persistent dense stellate hairs.

Sterile specimens of *S. stupefactum* are very similar to *S. densevestitum*, particularly in leaf size, shape and indumentum, but *S. stupefactum* is a more robust plant with prickly stems and petioles.

***Conservation status*:** *S. stupefactum* is currently known from a few locations. It is not known from a conservation reserve. It is threatened by land clearing and competition from weeds, particularly *Lantana camara*. Applying the IUCN guidelines (IUCN. 2001), a category of "Vulnerable" is recommended (VU B2ab(ii,iii); C1).

87. *Solanum incanum L., Sp. Pl. 188 (1753). **Type:** Herb. J. Burser Vol. IX No. 20 (neo: UPS), *fide* Hepper & Jaeger, Kew Bull. 40: 388 (1985).

Erect, rhizomatous perennial shrub, 0.5–1.5 m high. Juvenile stage unknown. Adult branchlets brown or green; prickles 25–50 per decimetre, curved, broad-based, 3–7 mm long, 2–3 times longer than wide; stellae dense, 0.7–1 mm diameter, stalks 0–0.2 mm long; lateral rays 6–8, porrect; central ray 0.7–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, shallowly lobed throughout; lobes 2 or 3 on each side, obtuse, lobing index 1.1–1.6; lamina 3.5–8.5 cm long, 2.3–5 cm wide, 1.5–1.7 times longer than broad, apex obtuse or acute, base cuneate or obtuse, oblique part 0–2 mm long, obliqueness index 0–2 percent; petioles 0.8–1.7 cm long, 20–30% length of lamina, prickles present. *Upper leaf surface* grey-green; prickles 3–11, straight, broad-based, 5–10 mm long, prickles present on midvein only or present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae density moderate to dense, 0.3–0.5 mm apart, 0.4–0.7 mm across, sessile; lateral rays 4–8, porrect; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green to white; prickles 5–15, straight, broad-based, prickles present on midvein only or present on midvein and lateral veins; stellae dense, 0.1–0.2 mm apart, 0.5–0.7 mm diameter, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, solitary or pseudo-umbellate, common peduncle absent; 1–3-flowered, strongly andromonoecious, flowers 5-merous. Flowers markedly dimorphic, with larger pricklier basal flower(s); pedicels 5–10 mm long at anthesis, same thickness throughout, 0.4–1 mm thick at mid-point, prickles absent or present. Calyx prickles on basal bisexual flowers 10–30, 2–7 mm long; prickles absent from distal male flowers. Calyx tube 3–4 mm long, lobes deltate or rostrate, 1.5–2.5 mm long; stellae very dense, yellow or white, 0.6–0.8 mm across, stalks 0–0.2 mm long, lateral rays 7 or 8, central ray 0.8–1.2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. Corolla purple, 9–12 mm long, rotate, inner surface sparsely stellate-hairy; anthers 4.5–5 mm long; ovary with stellate and Type 2 hairs; functional style 6.5–7 mm long, erect, with stellate and Type 2 hairs, stellae 0.6–0.7 mm across, lateral rays *c.* 9, central ray 0.5–1 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 4–7 mm long. Mature fruits 1 per inflorescence, globular, 18–22 mm diameter, yellow, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp *c.* 1 mm thick; pedicels 15–20 mm long in fruit, 0.8–1.2 mm thick at mid-point; seeds pale yellow or brown to black, 2–2.6 mm long.

***Specimens examined*: Queensland.** Port Curtis District: Castletower Creek, Awoonga Dam, Calliope Shire, Aug 1987, *Gibson* 852 (BRI); 2 Tabala Rd, Calliope, ex Kroombit road, Nov 1998, *Worthington* 1930 (BRI); Awoonga Dam, 1 km east of Charters Crossing, Aug 2000, *Bean* 16804 (BRI, K, MEL, NSW).

***Distribution and habitat*:** *Solanum incanum* is native to Africa. In Australia, it is naturalised only in the Calliope area south-west of Gladstone (**Map 30**), where it inhabits degraded sites, including rodsides and cleared alluvial flats.

***Phenology*:** Flowers recorded for August only; mature fruits recorded for August and November. The species probably produces

flowers and fruits for several months of the year.

Notes: *S. incanum* was first collected in Queensland in 1987, but not identified until recently.

88. *Solanum linnaeanum Hepper & P.Jaeger, Kew Bull. 41: 435 (1986). **Type:** South Africa. Somerset Div., Bosch Berg, June 1813, *W.J. Burchell* 3238 (holo: K, *n.v.*).

Solanum sodomeum, nom. rej., fide Hepper, Taxon 27: 555 (1979)

Solanum hermannii Dunal, *nom. illeg.* (= *S. sodomeum*)

***Illustrations*:** H. Heine, Solanaceae in Flore de la Nouvelle Calédonie, p. 147 (1976), as *S. sodomeum*; Cunningham *et al.* (1981: 594), as *S. sodomaeum*; Symon (1981: 265), as *'S. hermanni' (sic).*

Erect, rhizomatous perennial shrub, 0.7–1.5 m high. Juvenile stage unknown. Adult branchlets grey, brown or green; prickles 10–25 per decimetre, straight, broad-based, 3–7 mm long, 2–3 times longer than wide; stellae sparse, 0.25–0.4 mm diameter, stalks 0–0.2 mm long; lateral rays 7 or 8, porrect; central ray 0.1–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* ovate or broadly ovate, deeply lobed throughout; lobes 3 or 4 on each side, obtuse, lobing index 5–13; lamina 5–12.5 cm long, 2.8–8 cm wide, 1.4–1.9 times longer than broad, apex obtuse, base cuneate or obtuse, oblique part 0–10 mm long, obliqueness index 0–8 percent; petioles 0.6–2.7 cm long, 10–25% length of lamina, prickles present. *Upper leaf surface* green; prickles 9–25, straight, broad-based, 3–13 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae very sparse, 0.9–2 mm apart, 0.25–0.4 mm across, sessile; lateral rays 6–9, porrect; central ray 0.7–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Lower leaf surface* green; prickles 8–20, straight, broad-based, prickles present on midvein and lateral veins; stellae sparse to moderate, 0.5–1 mm apart, 0.4–1 mm diameter, stalks 0–0.1 mm long; lateral rays 6–8, porrect; central ray 0.8–2 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-umbellate, common peduncle absent; 3–5-flowered, strongly or weakly andromonoecious, flowers 5-merous. Flowers markedly dimorphic, with larger pricklier basal flower(s); pedicels 4–12 mm long at anthesis, same thickness throughout, 0.6–0.9 mm thick at mid-point, prickles present. Calyx prickles on basal bisexual flowers 60–100, 0.5–5 mm long; prickles on distal male flowers 12–25, 0.5–3 mm long. Calyx tube 3–5 mm long, lobes elliptic or deltate, 2–5.5 mm long; stellae moderate to dense, white or transparent, 0.2–0.5 mm across, sessile, lateral rays 4–7, central ray 0.5–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla purple, 8–15 mm long, shallowly or deeply lobed, inner surface sparsely stellate-hairy; anthers 5–6 mm long; ovary glabrous or with stellate hairs only; functional style 7.5–9 mm long, erect, with stellate hairs only, stellae 0.2–0.25 mm across, lateral rays 6–8, central ray 1.5–2 times as long as laterals. *Fruiting calyx* with lobes less than half length of mature fruit, prickles 1–5 mm long. Mature fruits 1 or 2 per inflorescence, globular, 23–30 mm diameter, yellow, 2-locular; placenta in cross-section stalked, anvil-shaped; mesocarp moist but not juicy; exocarp 1–2.5 mm thick; pedicels 17–21 mm long in fruit, 1.5–3 mm thick at mid-point; seeds brown to black, 2.9–3.5 mm long. *Apple of Sodom.* **Fig. 10.**

***Selected specimens*: Queensland.** South Kennedy District: Plateau road, Crediton, SE of Eungella, Apr 2002, *Bean* 18656 (BRI, MEL). Wide Bay District: 9.6 km S of Gunalda, Mar 1973, *Price s.n.* (BRI); Mary River, Conondale on the Maleny–Kenilworth road, Aug 1975, *Coveny* 6730 & *Hind* (BRI, NSW); Currymore, NW of Maleny, Apr 1993, *Bean* 6017 (BRI); 0.8 km S of Kenilworth P.O., Aug 1999, *Bean* 15243 (BRI). Moreton District: Victoria Park, Oct 1888, *Simmonds* (BRI); Caloundra, North Coast Line, Aug 1933, *Everist* 402 (BRI); Flagstone via Tamborine, Nov 1963, *Wood* (BRI); Mt Glorious–Samford road, Jan 1965, *Henderson* H105 (BRI); Dunwich, North Stradbroke Is, Sep 1969, *Coveny* 2070 (BRI, NSW); Zillmere, Brisbane, Sep 1980, *Dillewaard* 16 & *Olsen* (BRI); Long Pocket road, Indooroopilly, Brisbane, May 1981, *Dillewaard* 603 & *Stanley* (AD, BRI); 3 km W of Ripley, S of Swanbank powerhouse, Jan 1986, *Dowling s.n.* (BRI); 1 km N of Bellthorpe Forest station, Conondale Range, Oct 1993, *Halford* Q1909 (BRI); Banks Creek road, 6 km NE of Fernvale, Jul 2000, *Bean* 16711 (BRI, MEL); 1.2 km along Tabletop road, S of Canungra, Apr 2001, *Bean* 17598 (BRI).

***Distribution and habitat*:** *Solanum linnaeanum* is native to South Africa. In Queensland, it is

naturalised in areas south from Gunalda, within about 50 km of the coast, and then on the Eungella plateau west of Mackay (**Map 32**). It is also naturalised in New South Wales. It grows on degraded sites, including pasture and roadsides.

***Phenology*:** Flowers are recorded from July to December; fruits may be found throughout the year.

***Notes*:** *S. linnaeanum* is one of Australia's first recorded introduced weeds. It was found by Robert Brown around Port Jackson in 1802. The first Queensland naturalisation (around Brisbane) was recorded by Bailey (1881).

Group 33 (S. rostratum group) of Whalen (1984)

Corolla yellow, rotate; one anther much longer than the remainder; calyx prickles abundant; lower leaf surface and calyx with Type 2 hairs; style sigmoid; seeds brown to black; hypanthium accrescent, enclosing the fruit; adult leaves deeply lobed.

12 species in North and South America; 1 species naturalised in Australia, and present in Queensland.

89. *Solanum rostratum Dunal, Hist. Nat. Solanum 234, t. 24 (1813); *Nycterium rostratum* (Dunal) Link, Enum. Hort. Berol. 1: 189 (1821); *Androcera rostrata* (Dunal) Rydb., Bull. Torrey Bot. Club 33: 150 (1906). **Type:** cultivated at Montpellier, undated, *coll. unknown* (holo: MPU; iso: G-DC, P), *fide* Whalen (1979).

***Illustration*:** Cunningham *et al.* (1981: 595); Symon (1981: 109)

Sprawling or erect, herbaceous resprouter or rhizomatous perennial shrub, 0.3–0.6 m high. Juvenile stage unknown. Adult branchlets brown or green; prickles 180–240 per decimetre, straight, acicular or broad-based, 1–7 mm long, 6–9 times longer than wide; stellae sparse to dense, 0.3–1.3 mm diameter, stalks 0–0.1 mm long; lateral rays 4–7, porrect or ascending; central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs absent. *Adult leaves* elliptical, ovate or broadly ovate, deeply lobed throughout; lobes 3 or 4 on each side, obtuse, lobing index 9–50; lamina 4–8 cm long, 2.1–4.2 cm wide, 1.5–1.9 times longer than broad, apex obtuse, base cuneate to cordate, oblique part 0–3 mm long, obliqueness index 0–4 percent; petioles 1.3–2.9 cm long, 35–50% length of lamina, not winged or winged, prickles present. *Upper leaf surface* green; prickles 9–35, straight, broad-based, 2–7 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae present; ordinary stellae density moderate, 0.3–0.8 mm apart, 0.6–0.9 mm across, sessile; lateral rays 4–6, porrect; central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.1–0.2 mm apart. *Lower leaf surface* green; prickles 10–20, straight, broad-based, prickles present on midvein and lateral veins; stellae moderate to dense, 0.2–0.5 mm apart, 0.8–1.1 mm diameter, stalks 0–0.1 mm long; lateral rays 4–8, porrect; central ray 1–1.7 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present throughout, 0.2–0.4 mm apart. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 5–20 mm long, rachis prickles present; 5–10-flowered, weakly andromonoecious, flowers 5-merous; pedicels 3–6 mm long at anthesis, markedly thicker distally, 0.5–0.7 mm thick at mid-point, prickles present. Calyx tube 2.5–3.5 mm long, lobes deltate or attenuate, 4–5.5 mm long; prickles present at anthesis, 100–250 per flower, 1–9 mm long; stellae dense, transparent, 0.6–1.3 mm across, stalks 0–0.3 mm long, lateral rays 4–8, central ray 0.8–1.5 times as long as laterals, not gland-tipped; finger hairs absent; Type 2 hairs present. Corolla yellow, 9–15 mm long, rotate, inner surface glabrous; anthers 3.5–7.5 mm long; ovary glabrous; functional style *c.* 13 mm long, sigmoid, glabrous. *Fruiting calyx* tube accrescent, enclosing most or all of mature fruit, prickles 1–11 mm long. Mature fruits 4–8 per inflorescence, globular, 9–12 mm diameter, 2-locular; mesocarp dry; pedicels 6–10 mm long in fruit, 1–1.2 mm thick at mid-point; seeds brown to black, 2–2.7 mm long. *Buffalo Burr.*

***Specimens examined*: Queensland.** Burnett District: 5 miles SW of Gayndah, Nov 1971, *Sauer* (BRI). Darling Downs District: Jandowae, Portion 69, Parish Canaga, Nov 1961, *Sperling* (BRI); 28 km W of Miles, Dec 1973, *Pollock* (BRI); 'Rosewood Downs', Limevale, Mar 1981, *Major* (BRI); Portion 28V, Shire of Clifton, Dec 1983, *Achilles*

(BRI); Clifton, Dec 1983, *Beitz* (BRI). MORETON DISTRICT: Gatton, Feb 1906, *Bailey* (BRI). **New South Wales.** NORTH WEST SLOPES: Warialda district, Dec 1961, Vet. Inspector (NSW).

***Distribution and habitat*:** *Solanum rostratum* is indigenous to the U.S.A. and Mexico. There have been sporadic naturalisation records from several parts of south-eastern Queensland (**Map 24**), with the most recent record being in 1983. It is naturalised in all southern Australian states except Tasmania. It grows on degraded sites (pastures and crops).

***Phenology*:** Flowers are recorded in November and December; fruits are recorded in March, November and December.

***Notes*:** This is the only species of the American *S.* sect. *Androceras* that is naturalised in Australia (Whalen 1979), and the only Australian species of *Solanum* (native or naturalised) with yellow flowers.

I have been unable to locate populations of *S. rostratum* in Queensland, and it is rather doubtful whether it still occurs here.

Ungrouped. Whalen (1984) did not assign this species to any group

90. *Solanum sisymbriifolium Lam., Tabl. Encycl. 2: 25 (1794). **Type:** Buenos Aires, Argentina, undated, *P. Commerson* (syn: P-LAM), microfiche 469.14.

***Illustration*:** Symon (1981: 111)

Erect, rhizomatous perennial shrub, 0.8–1.5 m high. Juvenile stage unknown. Adult branchlets brown or green; prickles 30–60 per decimetre, straight or curved, broad-based, 1–12 mm long, 5–7 times longer than wide; stellae dense, 0.3–0.5 mm diameter, sessile; lateral rays 6–12, ascending or multiradiate; central ray 1.5–3 times as long as laterals, not gland-tipped or gland-tipped; finger hairs present, gland-tipped, 0.2–0.4 mm long; Type 2 hairs absent. *Adult leaves* broadly ovate, deeply lobed throughout; lobes 4–6 on each side, acute, lobing index 2.5–11; lamina 8–12 cm long, 5.5–8.5 cm wide, 1.4–1.8 times longer than broad, apex acute, base obtuse or cordate, oblique part 0–5 mm long, obliqueness index 0–5 percent; petioles 2.1–4.6 cm long, 21–40% length of lamina, winged, prickles present. *Upper leaf surface* green; prickles 9–30, straight, broad-based, 1–10 mm long, prickles present on midvein and lateral veins; stellate hairs distributed throughout; protostellae absent; ordinary stellae sparse to moderate density, 0.3–0.5 mm apart, 0.3–0.5 mm across, sessile; lateral rays 4–6, ascending; central ray 1–3 times as long as laterals, not gland-tipped; finger hairs present, 0.2–0.9 mm apart, gland-tipped, 0.2–0.3 mm long; Type 2 hairs absent. *Lower leaf surface* green; prickles 7–20, straight, broad-based, prickles present on midvein and lateral veins; stellae moderate, 0.3–0.6 mm apart, 0.4–0.6 mm diameter, sessile; lateral rays 4–7, ascending; central ray 1–2 times as long as laterals, not gland-tipped; finger hairs present, 0.2–0.4 mm apart, gland-tipped, 0.2–0.3 mm long; Type 2 hairs absent. *Inflorescence* supra-axillary, pseudo-racemose, common peduncle 15–52 mm long, rachis prickles present; 4–11-flowered, weakly andromonoecious, flowers 5-merous. Flowers all similar; pedicels 5–12 mm long at anthesis, same thickness throughout, 0.5–0.7 mm thick at mid-point, prickles present. Calyx tube 1.5–3 mm long, lobes deltate, 5–6.5 mm long; prickles present at anthesis, 25–90 per flower, 1–7 mm long; stellae dense, transparent, 0.4–0.6 mm across, sessile, lateral rays 6–10, central ray 2–3 times as long as laterals, not gland-tipped or gland-tipped; finger hairs present; Type 2 hairs absent. Corolla white, 11–16 mm long, rotate or shallowly lobed, inner surface glabrous; anthers 8–10 mm long; ovary with Type 2 hairs only; functional style 15.5–17 mm long, erect, with Type 2 hairs only or with stellate and Type 2 hairs, stellae *c.* 0.25 mm across, lateral rays *c.* 6, central ray 2–3 times as long as laterals. *Fruiting calyx* with lobes more than half length of mature fruit, prickles 2–10 mm long. Mature fruits 1–3 per inflorescence, globular, 15–20 mm diameter, red; pedicels 17–25 mm long in fruit, 1.1–1.9 mm thick at mid-point; seeds pale yellow, 2.9–3.2 mm long.

***Specimens examined*: Queensland.** DARLING DOWNS DISTRICT: near Toowoomba, Bellview St, Jan 1921, *Leslie* (BRI); near Toowoomba, Mar 1953, *Clydesdale* (BRI); Toowoomba, S of Picnic Point, Oct 1964, *Everist* 7772 (BRI); 17 Trafalgar St Toowoomba, Mar 1996, *Story* (BRI); Nelson St Reservoir, Toowoomba, Jul 1996, *Bean* 10448 (BRI); corner Nelson St and Ramsay St, Toowoomba, Dec 2001, *Bean* 18166 (BRI, MEL, NSW).

Distribution and habitat: *Solanum sisymbriifolium* is indigenous to Bolivia, Brazil, Paraguay and Argentina in South America. In Queensland it is known only from Toowoomba (**Map 32**), where it has been naturalised for over 80 years. It grows on degraded sites in urban bushland, although once recorded as a weed of cultivation paddocks. Also naturalised in New South Wales and Western Australia.

Phenology: Flowers are recorded between October and March; mature fruits recorded in July and December.

Notes: Not assigned to a group by Whalen (1984), but appears to have affinity with the *S. incanum* group (strongly andromonoecious inflorescences, large fruits, somewhat dimorphic flowers).

Species doubtfully naturalised or formerly naturalised in Queensland

Solanum aculeastrum Dunal

Shrub to 2 m high, with large broad-based prickles, leaves that are white on the underside, and fruits about 3 cm across.

Specimens examined: **Queensland.** Moreton District: Victoria Park, Brisbane, Oct 1887, *Simmonds s.n.* (BRI); Cleveland, Aug 1906, *Rowney s.n.* (BRI); Sandgate, Moreton Bay, Sep 1915, *White s.n.* (BRI); Currumbin Heights, Nov 1962, *Wallace s.n.* (BRI).

Notes: *S. aculeastrum* is native to South Africa, and formerly naturalised in Queensland. Bailey (1881) stated that it "is met with in places covering acres of land, with shrubs of from 6 to 9 feet in height". It has not been recorded since 1962.

Solanum dimidiatum Raf.

Shrub to 50 cm high, with deeply lobed leaves, acicular prickles on branchlets but none on the calyx.

Specimens examined: **Queensland.** Wide Bay District: Bundaberg, Dec 1963, *Arnold s.n.* (BRI); Greatheads Rd, Bundaberg, Mar 1966, *Draper* (BRI); Bundaberg, May 1972, *Henderson* 1322 (BRI).

Notes: *S. dimidiatum* was actively targeted for eradication in the Bundaberg area, and has not been seen since 1972.

Solanum lasiophyllum Dunal

A shrub with broad felty entire leaves and prickly stems. Calyx prickly, accrescent in fruit.

Specimens examined: **Queensland.** Wide Bay District: Bingera, Gibbsons and Howes Sugar Mill, Oct 1981, *Sarnadsky s.n.* (BRI)

Notes: *S. lasiophyllum* is an Australian species occurring commonly in Western Australia. A small population was documented from near Bundaberg in 1981, but it did not persist.

Solanum pseudolulo Heiser

A small shrub with broad shallowly-lobed leaves, prickles abundant on leaves and stems, calyx without prickles, fruits large and tomentose.

Specimens examined: **Queensland.** Cook District: Cairns Airport sewage treatment plant, Jun 2000, *King s.n.* (BRI). Moreton District: Cross St, Sinnamon Farm, Goodna, Ipswich, Jun 1988, *Perrott s.n.* (BRI).

Notes: The fruits of *S. pseudolulo* are edible, and it is often grown for that reason. These records are non-cultivated, but neither population has persisted. It is related to *S. lasiocarpum* Dunal.

Solanum pyracanthos Lam.

A shrub with deeply lobed, sparsely pubescent leaves and abundant orange prickles.

Specimen examined: **Queensland.** Moreton District: Bowen Park, Feb 1907, *White s.n.* (BRI).

Notes: *S. pyracanthos* was recorded by Bailey (1881) as being naturalised in Brisbane, with the comment that "this species was introduced some years ago as an ornamental plant by the Queensland Acclimitisation Society, from whose grounds it has spread into the pasture". It is a native of Madagascar.

Excluded Species

Solanum tumulicola Symon

All Queensland specimens previously assigned to this species have proven to be *S. esuriale* Lindl.

Solanum coactiliferum J.M.Black

All Queensland specimens previously assigned to this species are referrable to *S. ammophilum* A.R.Bean.

Acknowledgements

Numerous people have assisted me in locating various species of *Solanum* in the field, or have collected material for me. I thank Andrew Ford, Keith McDonald, Bill McDonald, Paul Forster, Harry Hines, Bob Philips, Lana Little, Rod Fensham, Ed Meyer, Matt Bloor, Irene Champion, Steve Pearson, Megan Thomas and John Thompson. I am grateful to the Directors of AD, BH, BM, DNA, K, MEL, NSW, PERTH, PR and QRS for loan of specimens; Laurie Jessup for guiding me through the intricacies of DELTA; Will Smith for the art work and distribution maps; Peter Bostock for photographing some types while Australian Botanical Liaison Officer at Kew, and also for the Latin descriptions; Donovan Sharp for assistance with the stellate-hair images; and Wayne Harris for assistance with the photographing of type specimens.

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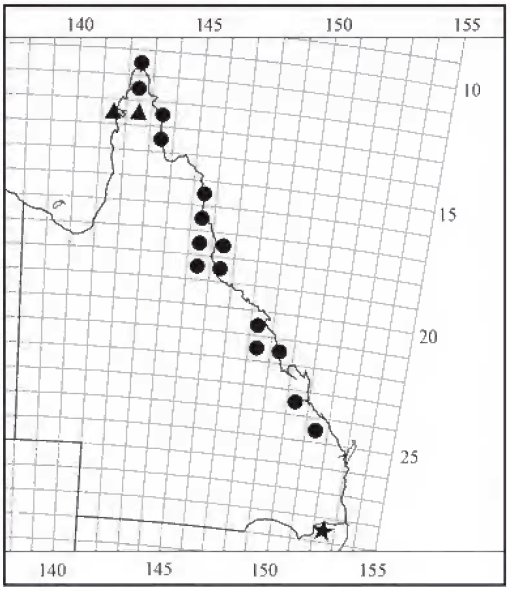
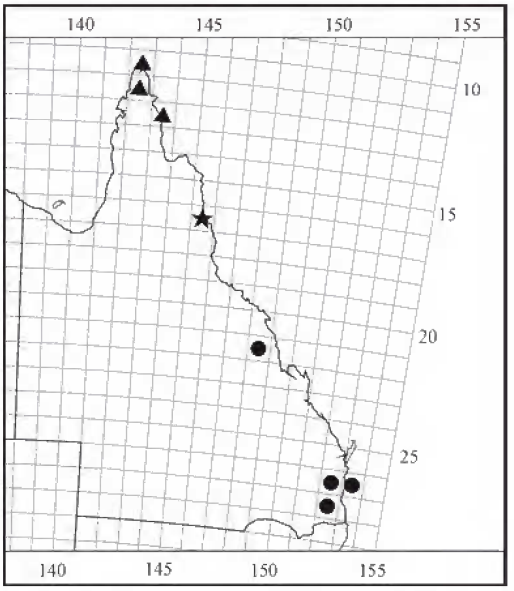
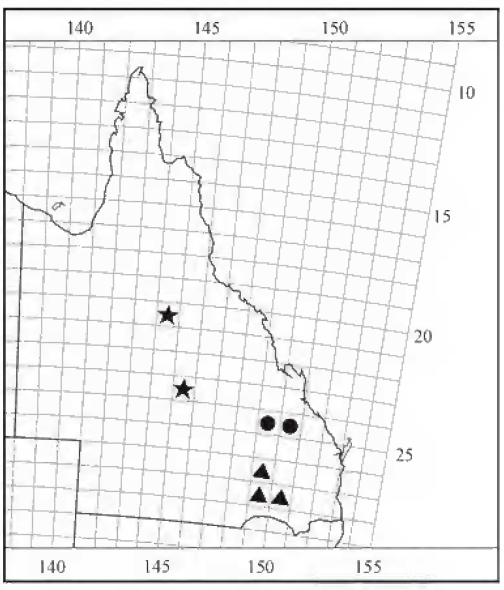


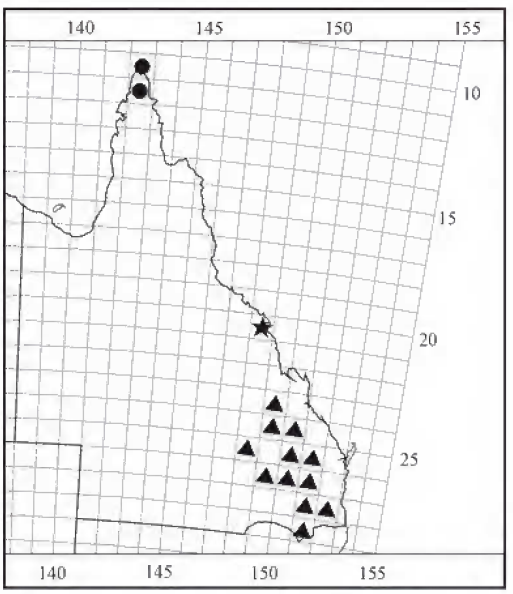
Map 1. Distribution of *Solanum dunalianum* ▲, *S.viridifolium* ● and *S.hapalum* ★.



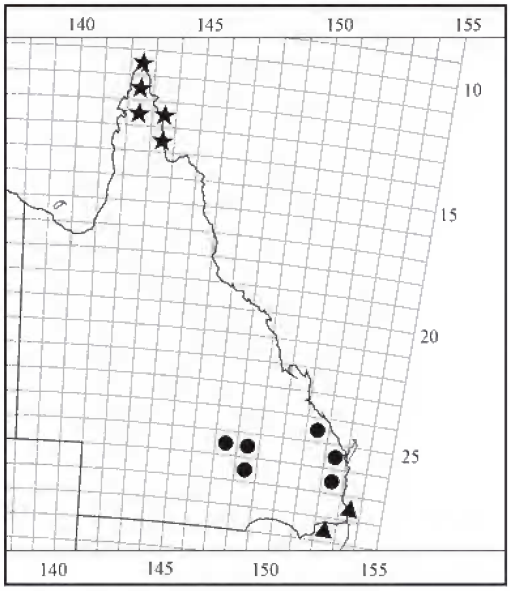
Map 2. Distribution of *Solanum densevestitum* ●, *S. fervens* ▲ and *S. dimorphispinum* ★.



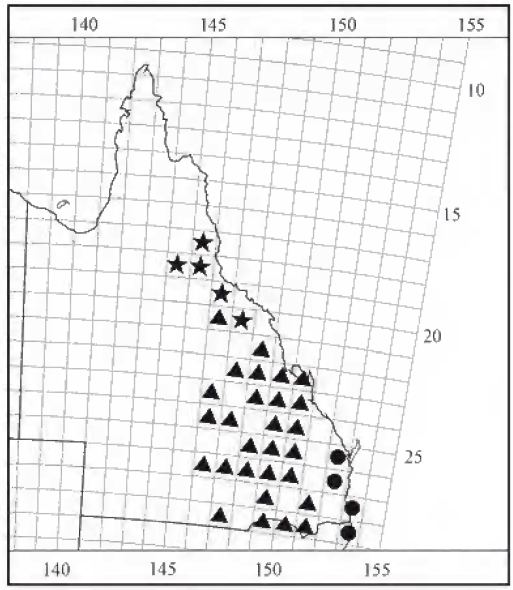
Map 3. Distribution of *Solanum johnsonianum* ● , *S. innoxium* ▲ ,and *S. ultimum* ★.



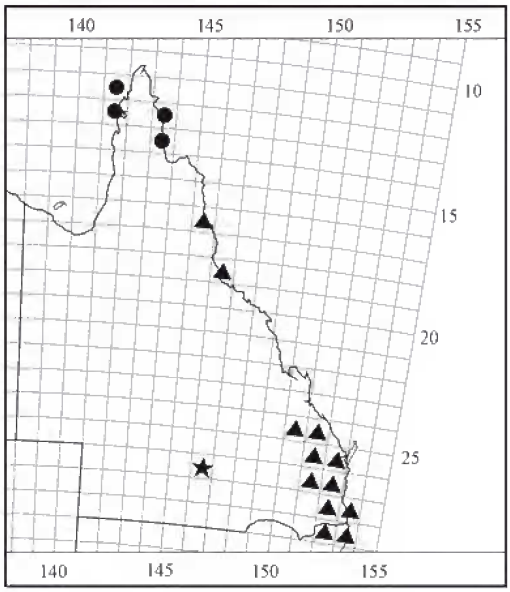
Map 4. Distribution of *Solanum nemophilum* ▲ , *S. yirrkalense* ● and *S. dryanderense* ★.



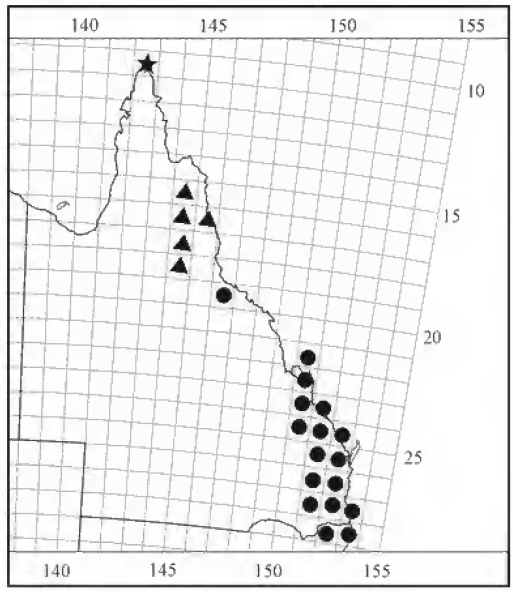
Map 5. Distribution of *Solanum gympiense* ●, *S. defensum* ★ and *S. mentiens* ▲.



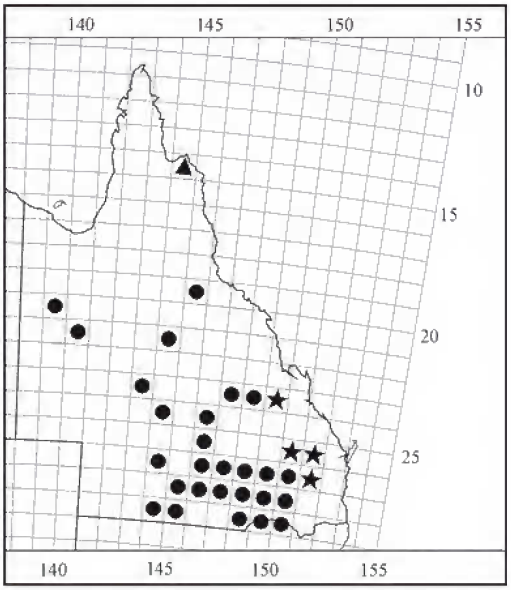
Map 6. Distribution of *Solanum shirleyanum* ●, *S. parvifolium ssp. parvifolium* ▲ and *S. parvifolium ssp. tropicum* ★.



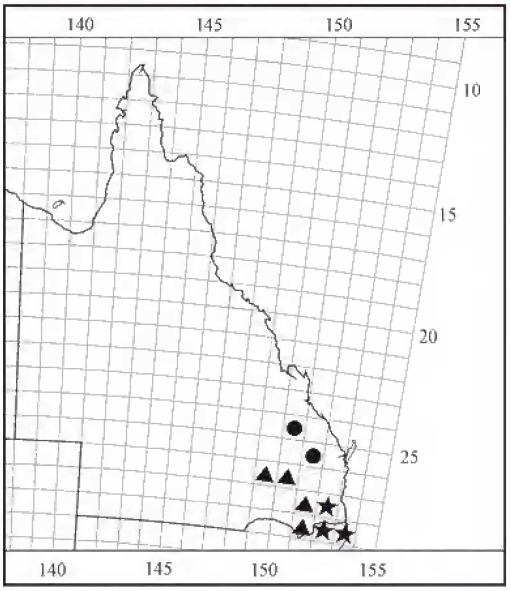
Map 7. Distribution of *Solanum discolor* ●, *S.corifolium* ▲ ,and *S.versicolor* ★.



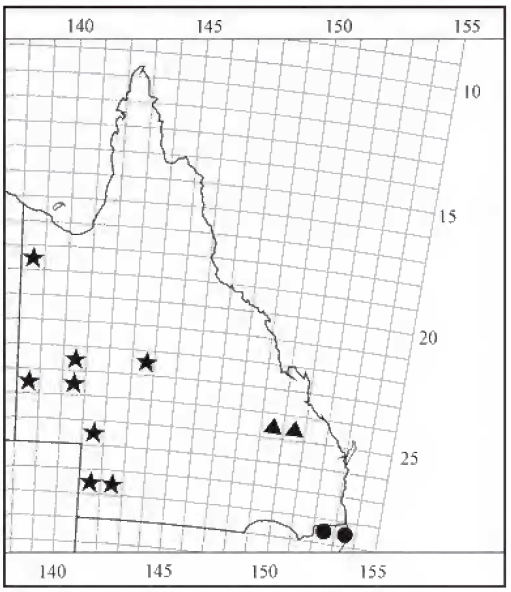
Map 8. Distribution of *Solanum stelligerum* ●, *S. lasiocarpum* ★ and *S. multiglochidiatum* ▲.



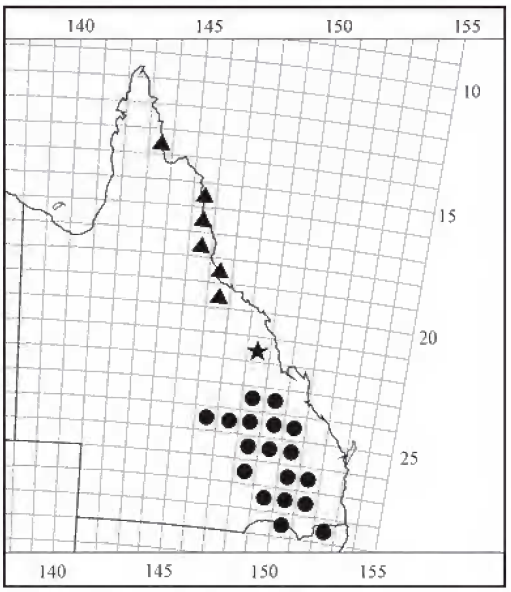
Map 9. Distribution of *Solanum ferocissimum* ●, *S. dysprosium* ▲ and *S. latens* ★.



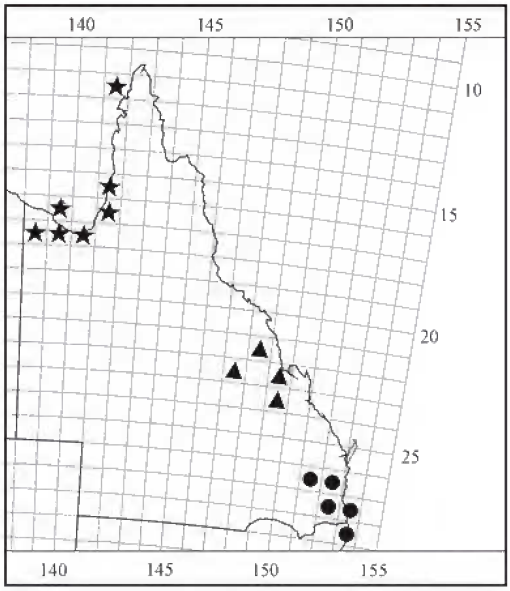
Map 10. Distribution of *Solanum lythrocarpum* ●, *S. coracinum* ▲ and *S. semiarmatum* ★.



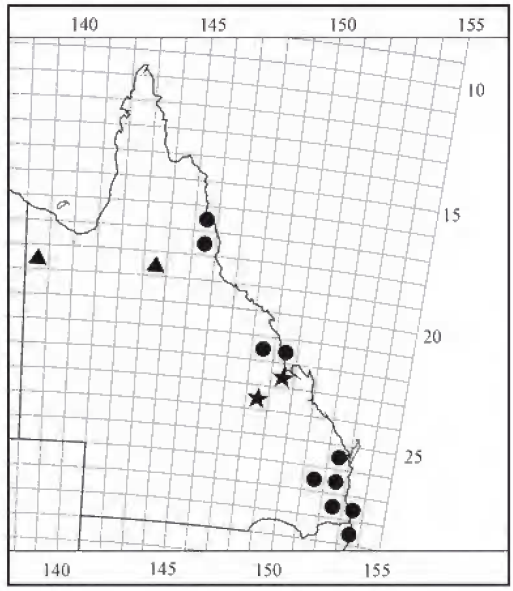
Map 11. Distribution of *Solanum dissectum* ▲, *S. inaequilaterum* ● ,and *S. chenopodinum* ★.



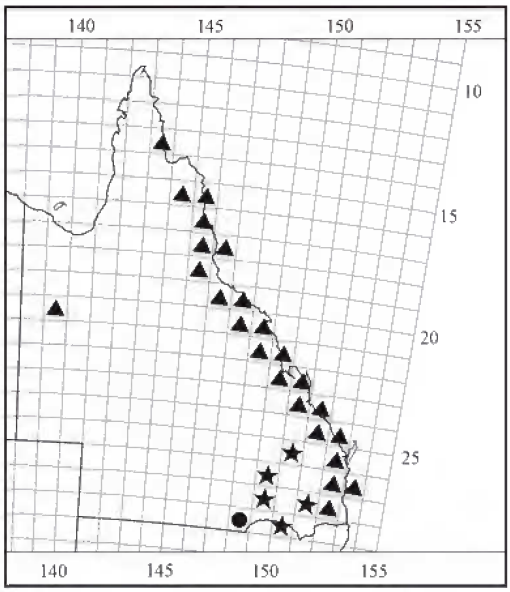
Map 12. Distribution of *Solanum mitchellianum* ●, *S. cookii* ▲ and *S. francisii* ★.



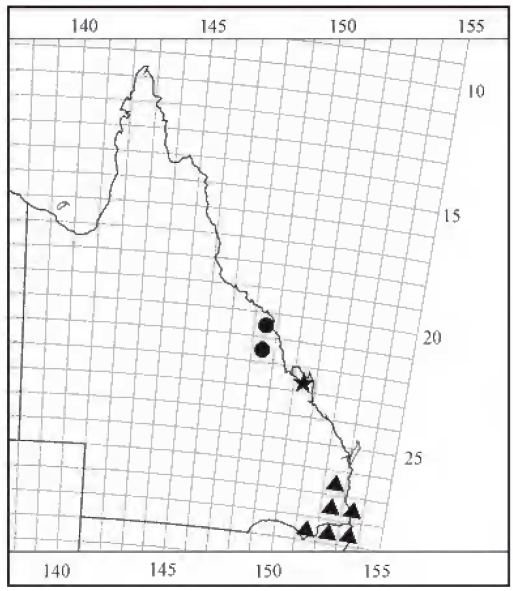
Map 13. Distribution of *Solanum chrysotrichum* ●, *S.pugiunculiferum* ★ and *S. adenophorum* ▲.



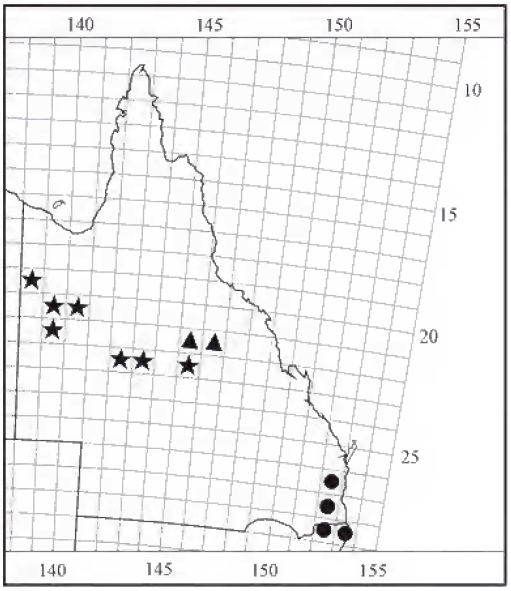
Map 14. Distribution of *Solanum capsicoides* ●, *S. pusillum* ★ and *S. carduiforme* ▲.



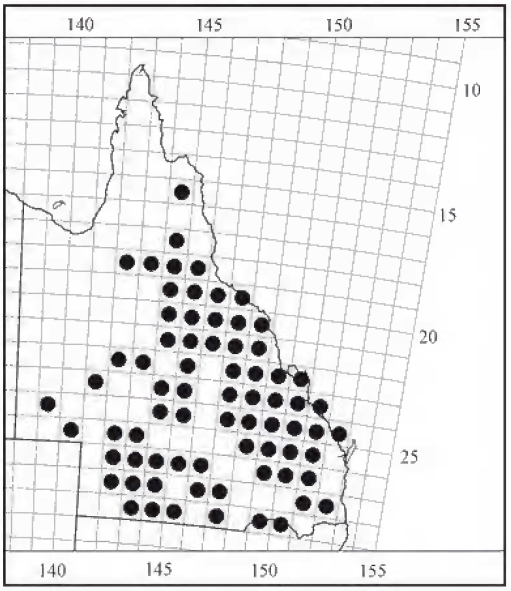
Map 15. Distribution of *Solanum lacunarium* ●, *S. torvum* ▲ and *S. stenopterum* ★.



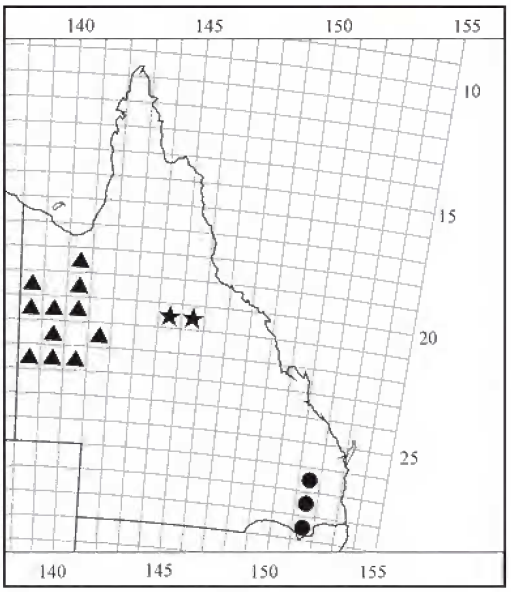
Map 16. Distribution of *Solanum ditrichum* ▲, *S. graniticum* ● and *S. dianthophorum* ★.



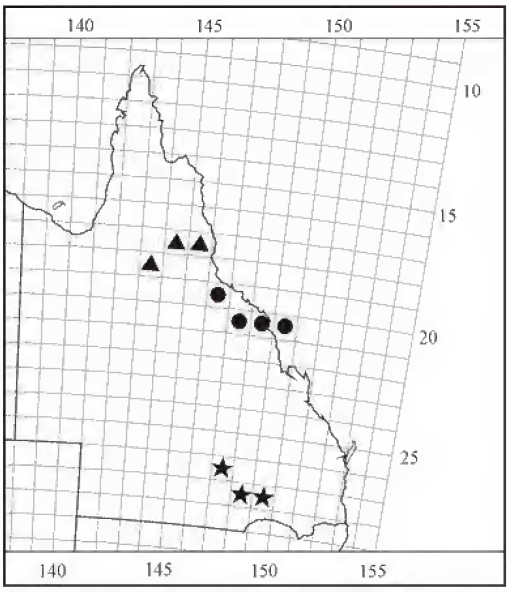
Map 17. Distribution of *Solanum vicinum* ●, *S.senticosum* ★ and *S. crebrispinum* ▲.



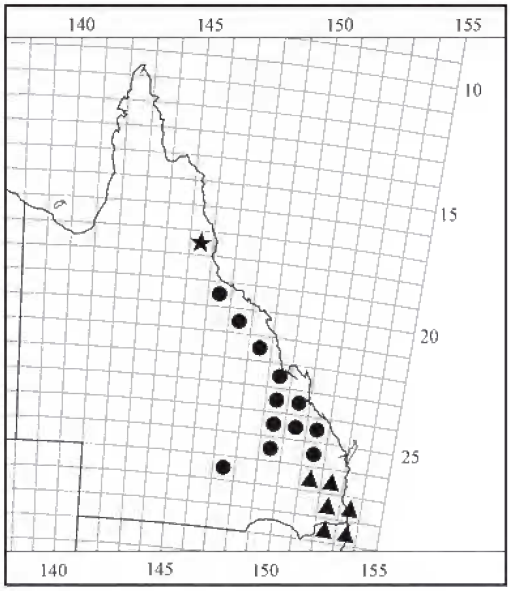
Map 18. Distribution of *Solanum ellipticum* ●.



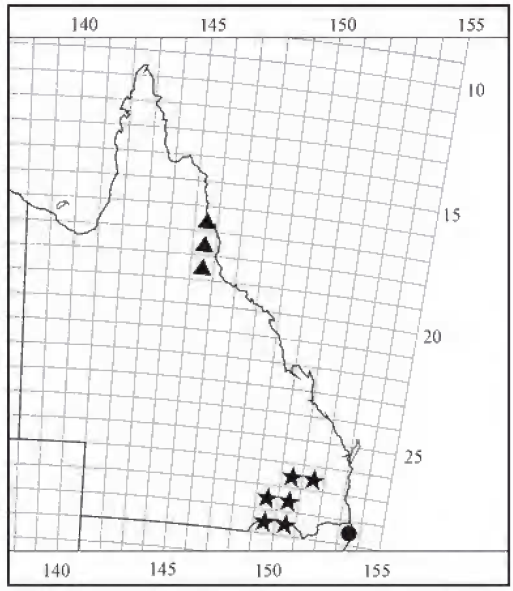
Map 19. Distribution of *Solanum papaverifolium* ●, *S. quadriloculatum* ▲, and *S. crassitomentosum* ★.



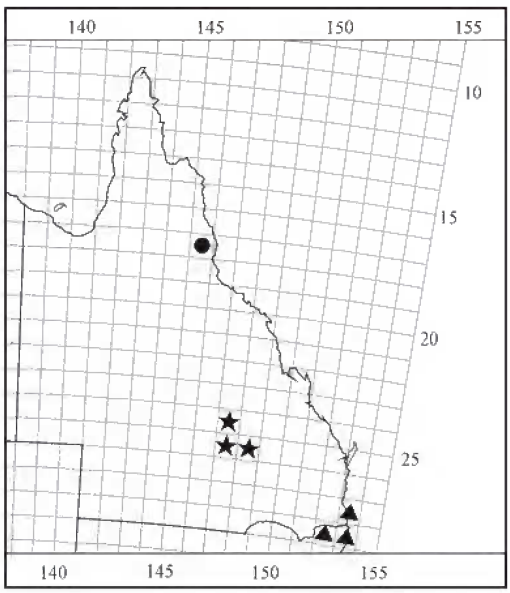
Map 20. Distribution of *Solanum angustum* ▲, *S. sporadotrichum* ● and *S. argopetalum* ★.



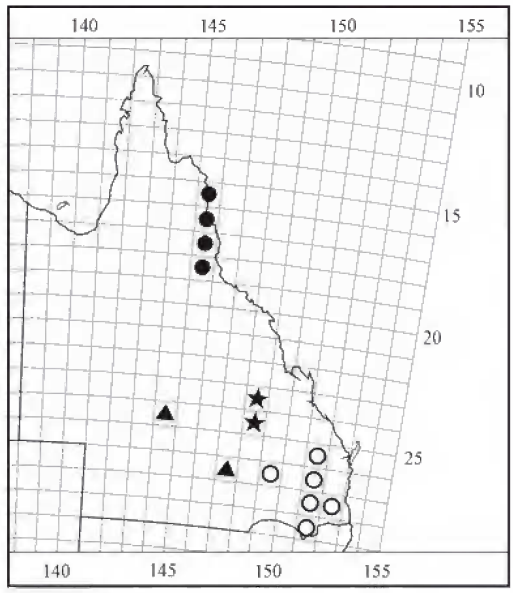
Map 21. Distribution of *Solanum furfuraceum* ●, *S.rixosum* ▲ and *S. hamulosum* ★.



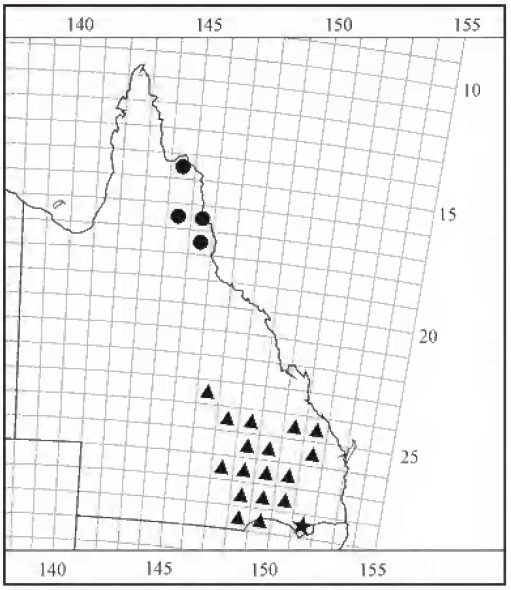
Map22 . Distribution of *Solanum macoorai* ▲, *S.acanthodapis* ● and *S. tetrathecum* ★.



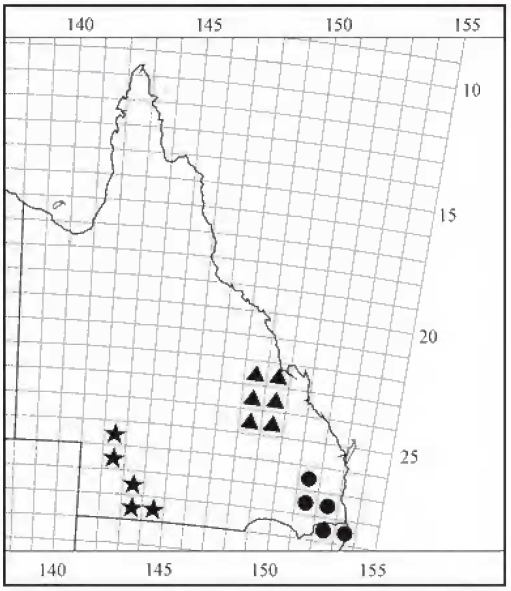
Map 23. Distribution of *Solanum dumicola* ★, *S. eminens* ●, and *S. serpens* ▲.



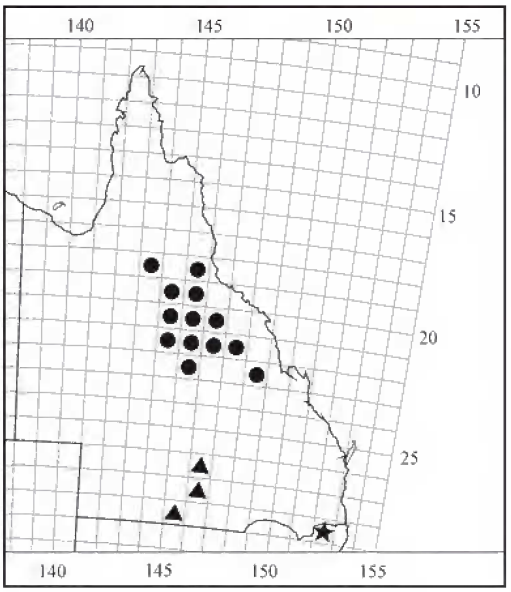
Map 24. Distribution of *Solanum magnifolium* ●, *S. cocosoides* ★, *S. centrale* ▲ and *S. rostratum* ○.



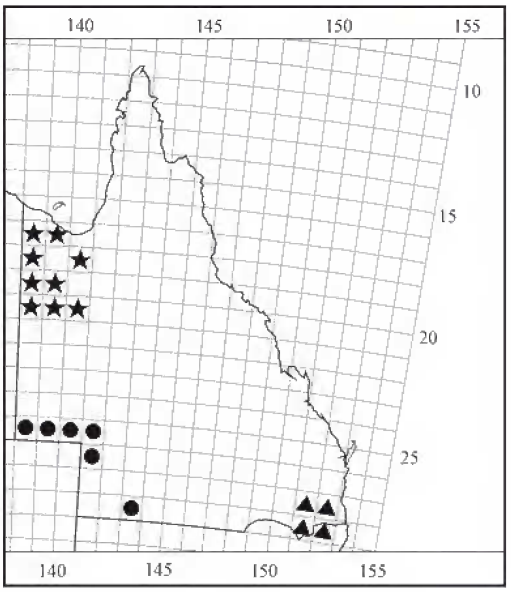
Map 25. Distribution of *Solanum cinereum*★, *S.intonsum*● and *S. jucundum*▲.



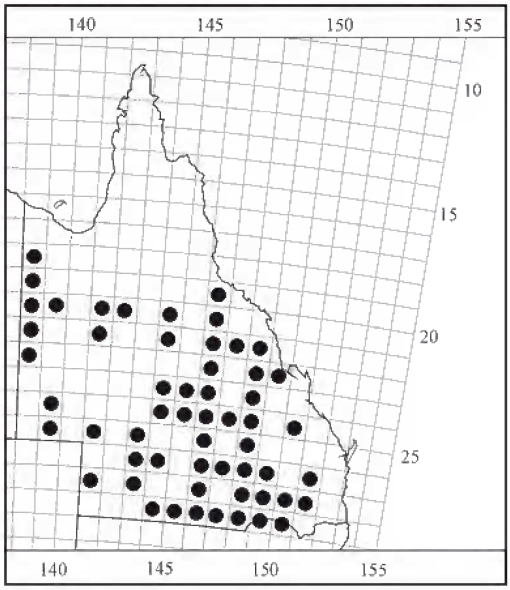
Map 26. Distribution of *Solanum elachophyllum*▲, *S.limitare*● and *S. sturtianum*★.



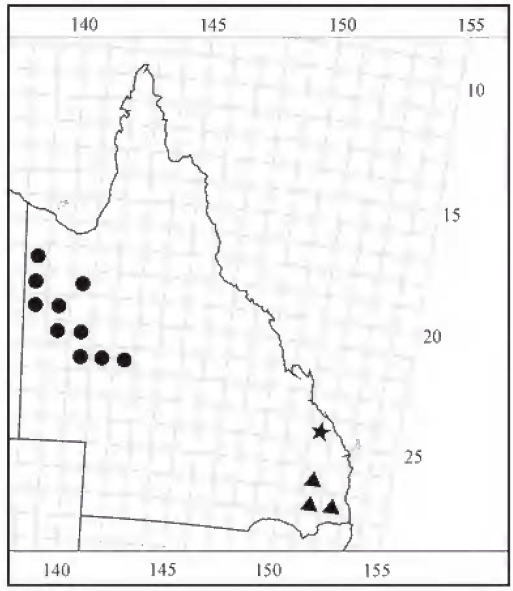
Map 27. Distribution of *Solanum ammophilum*▲, *S. galbinum*● , and *S. nobile*★.



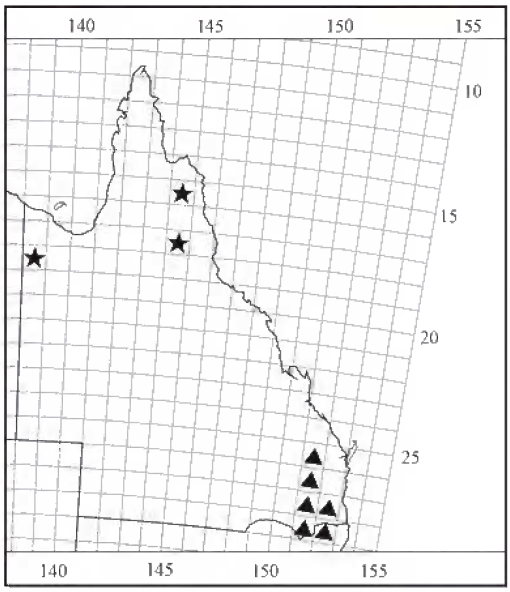
Map 28. Distribution of *Solanum amblymerum*▲, *S. echinatum*★ and *S. oligacanthum*● .



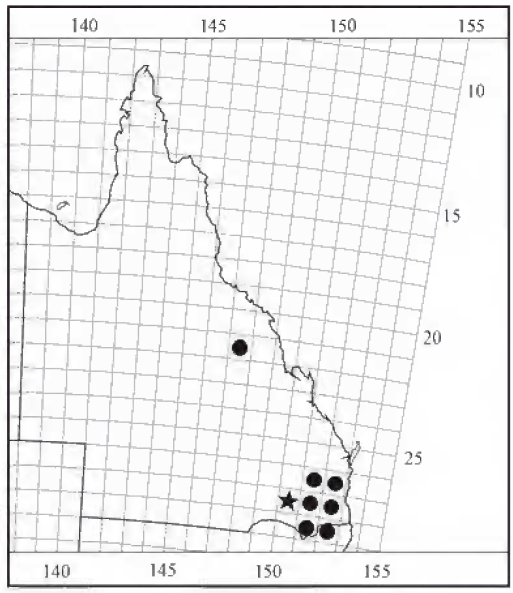
Map 29. Distribution of *Solanum esuriale* ●.



Map 30. Distribution of *Solanum chippendalei* ●, *S.incanum* ★ and *S. stupefactum* ▲.



Map31. Distribution of *Solanum elaeagnifolium* ▲, and *S. longissimum* ★.



Map 32. Distribution of *Solanum linnaeanum* ●, and *S. sisymbriifolium* ★.

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New names are printed in boldface; synonyms and misapplied names are printed in italics